AV64

Pentium ™ II/III processor
Based AGPset MAIN BOARD

User's Manual

Shuttle AV64

Pentium II/III processor based AGPset Mainboard
Manual Version 1.0

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M321

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About This Manual

1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience a success, right from the start, we have designed the 3 Hardware Installation section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new AV64 mainboard.

Experienced DIY User

Congratulations on your purchase of the Shuttle AV64 mainboard. You will find that installing your new Shuttle AV64 mainboard is just that easy. Bundled with an array of onboard functions, the highly-integrated AV64 mainboard provides you with a total solution to build the most stable and reliable system. Refer to section 3.2 Jumper Settings and Chapter 4 Software Utility to find out how to get the best out of your new mainboard. Chapter 5 BIOS Setup also contains relevant information on how to tune up your system to achieve higher performance.

System Integrator

You have wisely chosen Shuttle AV64 to construct your system. Shuttle AV64 incorporates all the state-of-the-art technology of the VT82C694X chipset from VIA. It integrates the most advanced functions you can find to date in a compact ATX board. Refer to section 3.2 Jumper Settings and Chapter 4 Software Utility for an in-depth view of system construction.

1.2 Item Checklist

Check all items you received with your AV64 mainboard to make sure nothing is missing. The complete package should include:

✸ One Shuttle AV64 Mainboard
(with onboard Slot1, built-in VIA694X chipset, ATX form factor, including 2xUSB, 2xSerial, and 1xParallel ports, plus 1xPS/2 Keyboard, and 1xPS/2 Mouse connectors.)
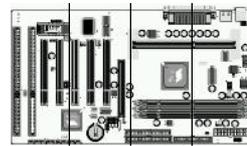
✸ One ATA/66 Ribbon Cable

✸ One Floppy Ribbon Cable

✸ One set of Universal Retention Mechanism
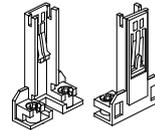
✸ This AV64 User's Manual
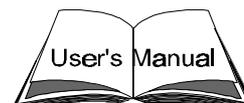
✸ One CD-ROM containing:
  ➢ The AV64 user's manual on PDF format
  ➢ The VIA 4 IN 1 Drivers
  ➢ The Award Flashing Utility

2 FEATURES

The AV64 mainboard is carefully designed for the demanding PC user who wants high performance and maximum intelligent features in a compact package.

2.1 Specifications

✷ CPU Support

Supports Slot-1 (Celeron, Pentium II/III and Coppermine) processor.
66/100/133MHz CPU Front Side Bus (FSB).

✷ Chipset

Features VIA VT82C694X AGPset with I/O subsystems.

✷ Jumperless CPU Configuration

Auto-detect CPU voltage
Soft-configure CPU Speed (The CPU operating speed is software configurable in the CMOS Setup menu of the BIOS Setup utility.)

✷ Versatile Memory Support

Equipped with three DIMM banks of PC/100 and PC/133 compliant SDRAM to provide up to 768MB of system memory.
Configurable support for EC (Error Checking) and ECC (Error Checking and Correcting).

✷ AGP Slots

AGP V2.0 Compliant
Supports Side Band Addressing (SBA) mode.
Supports 266MHz 4X mode for AD and SBA Signaling.

✷ PCI and ISA Expansion Slots

Provides five 32-bit PCI slots and two 16-bit ISA slots.

✷ LPC Super I/O Onboard

Provides a variety of I/O interfaces:
➢ 1 × Floppy interface for 3.5-inch FDD with 720KB, 1.44MB, 2.88MB

format or for 5.25-inch FDD with 360KB or 1.2MB format.

➢ 1 × PS/2 mouse connector
➢ 1 × PS/2 Keyboard connector
➢ 2 × USB connectors
➢ 2 × DB9 Serial connectors 16550 UART compatible
➢ 1 × Infrared communications port ASKIR and HPSIR compatible.
(Serial port COM2 can also be redirected to an external IrDA Adapter for wireless connection.)
➢ 1 × DB25 Parallel port supporting Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP) data transmission schemes.

✹ PCI Bus Master IDE Controller Onboard

Two UltraDMA 33/66 Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements data transfer speeds of up to 66 MB/sec and also supports Enhanced PIO Modes 3 & 4.

✹ ATX Power Supply Connector

ATX power supply unit can connect to the onboard 20-pin ATX power connector, supporting Suspend and Soft-On/Off by dual-function power button.

✹ Advanced Configuration and Power Interface

Features four power savings modes: Snoop, Suspend to RAM, Suspend to Disk, and Soft-Off. ACPI provides more efficient Energy Savings Features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

✹ System BIOS

Provides licensed Award V4.51PG BIOS on 2MB Flash EEPROM.
Supports Green PC and Desktop Management Interface (DMI).

✳ ATX Form Factor

System board conforms to the ATX specification.
Board dimensions: 305mm × 170mm

✳ Advanced Features

➢ **Dual Function Power Button -** The system can be in one of two states, one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system enters the Soft-Off mode.

➢ **Keyboard/Mouse Power-On -** This mainboard implements a special jumper to enable a system power-on function by keyboard or PS/2 mouse.

➢ **Wake-on-LAN (WOL) -** The onboard WOL connector can be attached to a network card that supports this function to wake up the system via the LAN.

➢ **Modem Ring Power-On** - The system can be powered on automatically by activation of the modem ring.

✳ Optional Features

➢ **Voltage Monitoring -** Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure stable current reach to mainboard components. System voltages include Vcore/ VTT on CPU, and +5V, +12V, -5V, -12V on system.

➢ **Fan Status Monitoring** - To prevent overheating of CPU, the CPU fan is monitored for RPM and failure. (CPU Cooling FAN with RPM sensor is required.)

3 HARDWARE INSTALLATION

This section outlines how to install and configure your AV64 mainboard. Refer to the following mainboard layout to help you identify various jumpers, connectors, slots, and ports. Then follow these steps designed to guide you through a quick and correct installation of your system.

3.1 Step-by-Step Installation

Accessories Of AV64
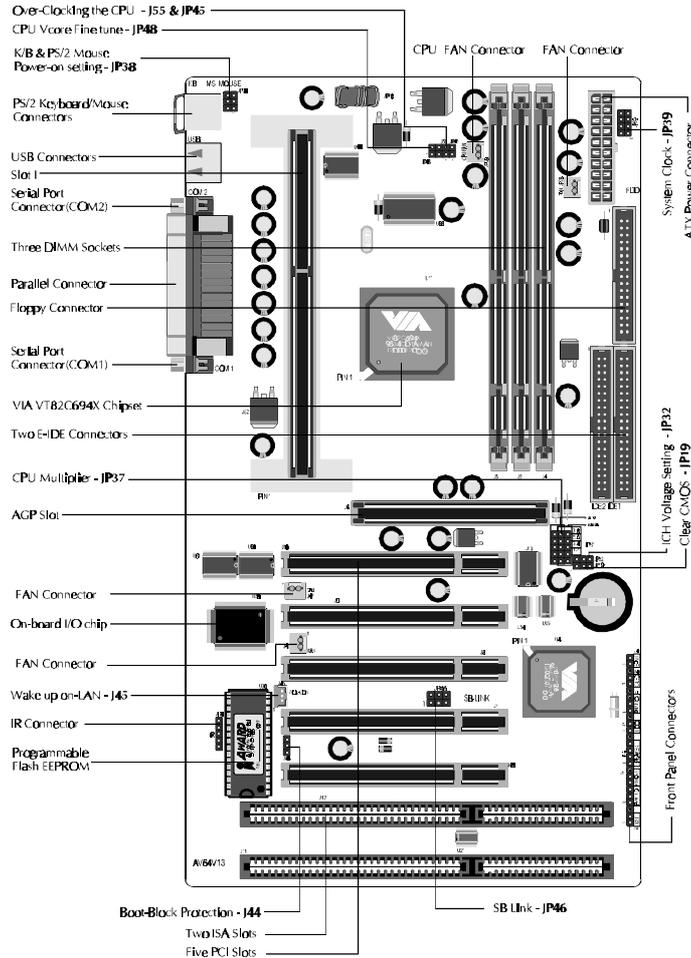
Step 1

Install the CPU

1. Mark your CPU Frequency

   Checking the working frequency of your cpu that should be clearly marked on the CPU cover or write your own combination in the space provided.

2. Pentium II/III Processor Installation

   < Locate the Retention Mechanism >

   To install a CPU, first turn off your system and remove its cover.

   ✧ Locate the Retention Mechanism **(1)** around the Slot 1.

   ✧ Take care of the Square Cut Mark **(1.1)**.

   ✧ Fix **(1)** by inserting Attach Mounts **(1.4)** up through holes **(A1...A4)** in the bottom of the mainboard, and screw the four captive nuts **(1.3)**.

   < Install the CPU >

   ✧ Insert CPU **(2)** into the Retention Mechanism **(1)**.

   ✧ Ensure that the alignment notch in the processor fits over the plug **(1.2)**, then push processor down firmly until it is seated.

   ✧ Push the latches **(2.1)** on the processor outward until they click into place.

   ✧ Connect power cable **(2.2)** of Fan/Heat Sink.
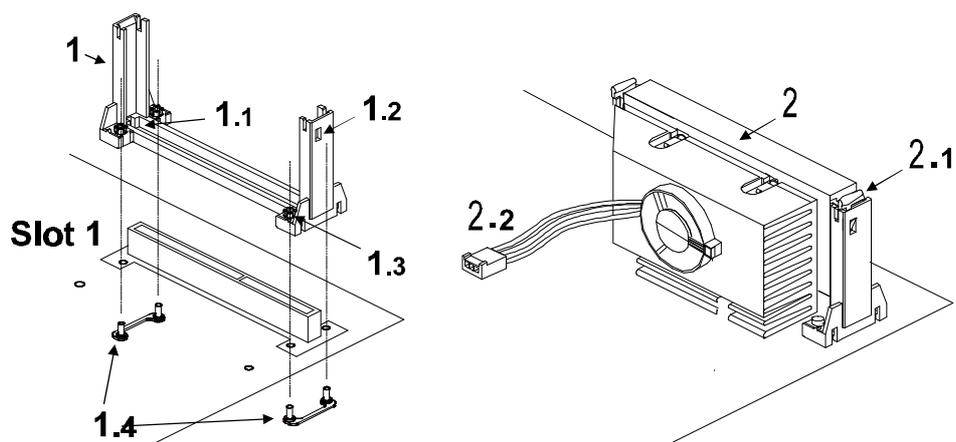
3. Celeron Processor Installation

< Locate the Retention Mechanism >

To install a CPU, first turn off your system and remove its cover.

✧ Insert two Retention Mechanism **(3)** on opposite side of Slot 1.

✧ Fix **(3)** by inserting Attach Mounts **(4)** up through holes **(A1...A4)** in the bottom of the mainboard, and screw the four captive nuts **(3.1)**.

< Install the CPU >

✧ Hold the processor **(5)** so that the Heatsink is facing toward the DIMM sockets on the mainboard.

✧ Slide the processor into the RM. Push the provessor down firmly, with even pressure on both sides of the top, until it is seated.
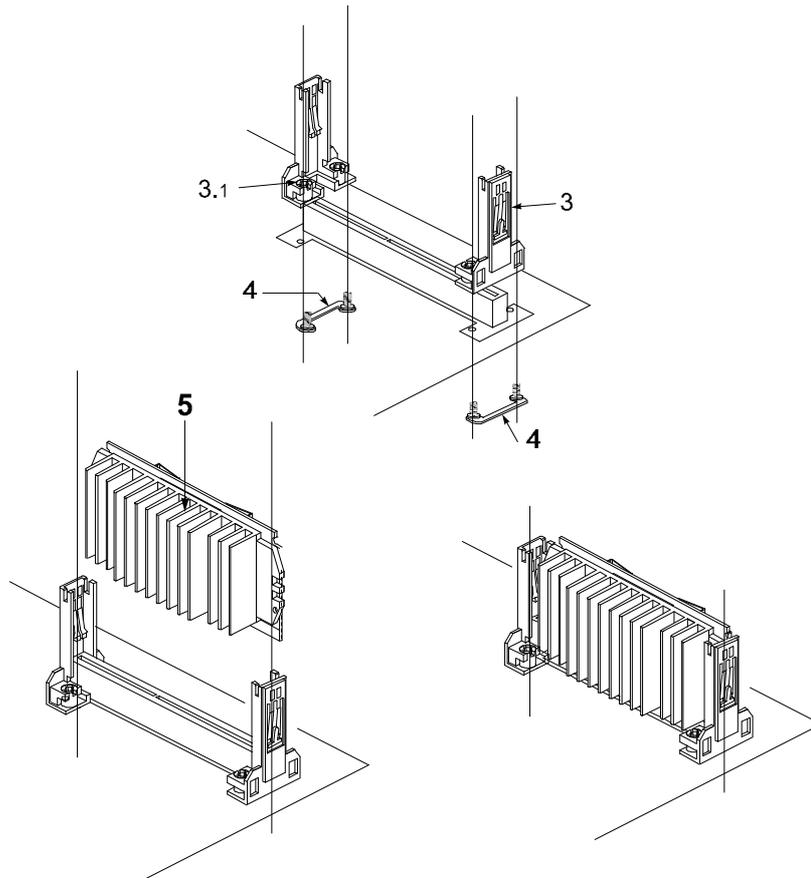
Step 2.

Set Jumpers

This mainboard is jumperless! The default jumper settings have been set for the common usage standard of this mainboard. Therefore, you do not need to reset the jumpers unless you require special adjustments as in any of the following cases:

1. Over-clock your CPU
2. Clear CMOS
3. Set the wake up function by keyboard/PS2 mouse

For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their system, section **3.2 Jumper Settings** will provide detailed information on how to configure your mainboard manually.

Step 3

Install SDRAM System Memory

To install memory, insert SDRAM memory module(s) in any one, two or three DIMM banks. Note that SDRAM modules are directional and will not go in the DIMM slots unless properly oriented. After the module is fully inserted into the DIMM socket, lift the clips of both sides of the DIMM bank to lock the module in place.
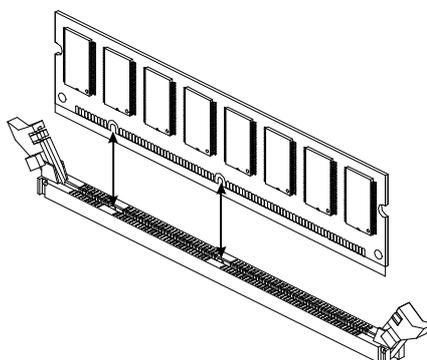
Step 4

Install Internal Peripherals in System Case

Before you install and connect the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including but not limited to the hard disk drive (IDE/HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit. This will greatly facilitate in making the connections to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE devices, HDD and CD-ROM, have to set jumpers to Master or Slave mode depending on whether you install more than one device of each kind.)

2. Connect IDE cable and FDD cable on the back-panel of the internal peripheral devices. Note that the cable should be oriented with its colored stripe (usually red or magenta) connected to pin#1 both on the mainboard IDE or FDD connector and on the device as well.

3. Connect an available power cable from your system power supply unit to the back-panel of each peripheral device. Note that the power cable is directional and cannot fit in if not properly positioned.

Step 5

Mount the Mainboard on the Computer Chassis

1. You may find that there are a lot of different mounting hole positions both on your computer chassis and on the mainboard. To choose a correct mounting hole, the key point is to keep the back-panel of the mainboard in a close fit with your system case, as shown below.
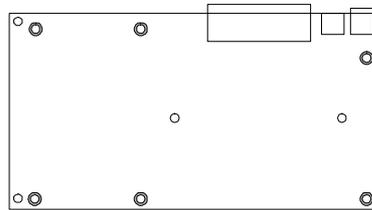
2. After deciding on the proper mounting holes, position the studs between the frame of the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical shorts be tween the board and the metal frame of the chassis. (If your computer case is already equipped with mounting studs, you will need to tighten screws to attach the mainboard.)

Note: In most computer housings, you will be able to find 4 or more attachment points to install mounting studs and fix the mainboard. If there aren't enough matching holes, then make sure to install at least 3 mounting studs to ensure proper attachment of the mainboard.

Step 6

Connect Front Panel Switches/LEDs/Speaker

You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (HDD LED, Power LED, Reset Switch, PC Speaker, etc.) These cables serve to connect the front-panel switches and LEDs to the mainboard's front-panel connectors group, as shown below.
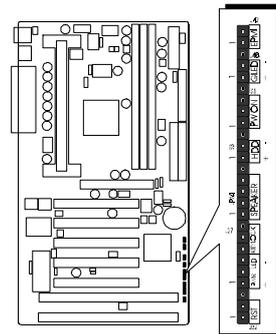
1. ATX Soft Power On/Off
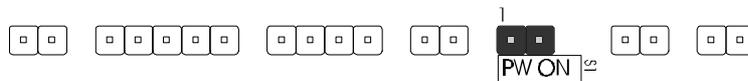
2. Power-LED
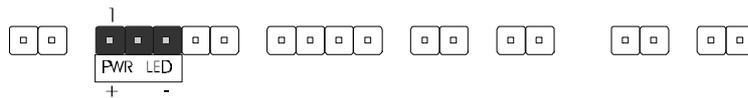
3. HDD-LED
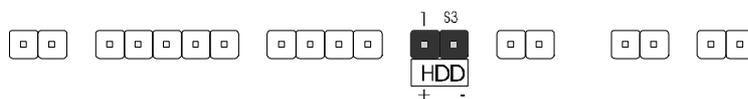
4. EPMI
   (Hardware System Management Interface)
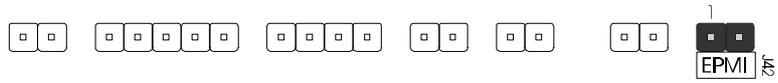
5. Green-LED
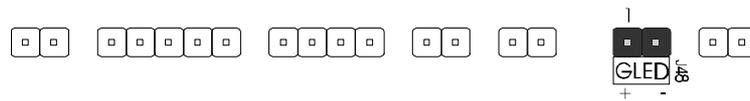
6. PC Speaker
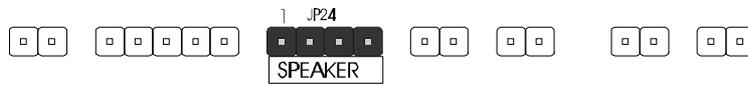
7. Hardware Reset Switch
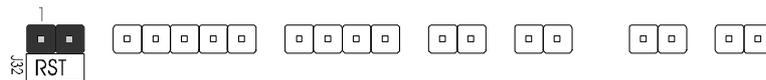
8. Keylock
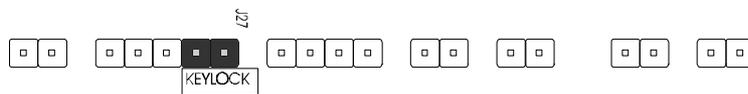
Step 7

Connect IDE & Floppy Disk Drives

1. IDE cable connector
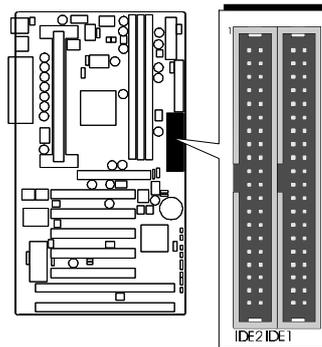
2. FDD cable connector
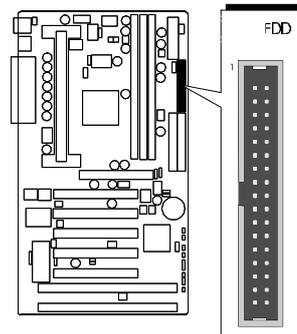
Step 8

Connect Other Internal Peripherals

1. IR connector
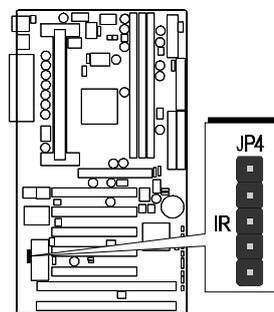
Step 9

Connect the Power Supply

1. System power connector
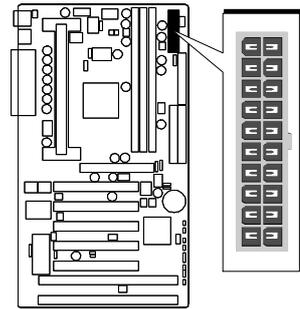
Step 10

Install Add-on Cards in Expansion Slots

1. Accelerated Graphics Port (AGP) Card
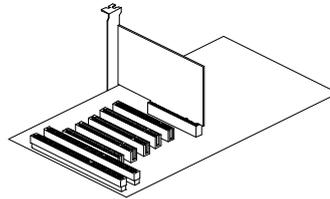
2. PCI Card
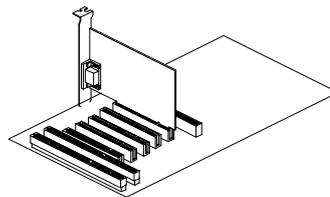
3. ISA Card
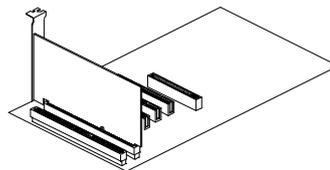
Step 11

Connect External Peripherals to Back Panel

You are now ready to put the computer case back together and get on to the external peripherals connections to your system's back-panel.
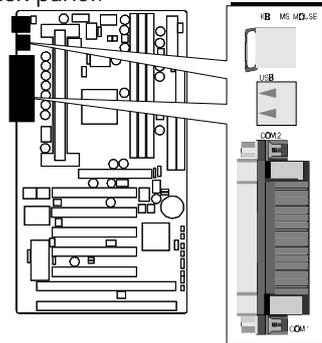
1. PS/2 Mouse and Keyboard

PS/2 Mouse

PS/2 keyboard

2. USB Devices

USB1 & USB2
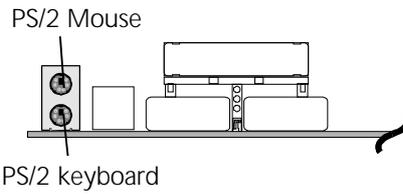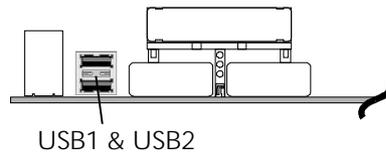
3. Parallel Port

Parallel Port

4. COM Ports

COM2   COM12
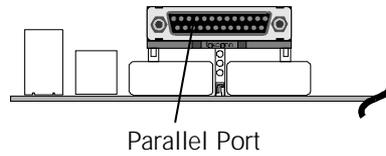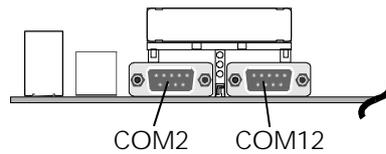
Step 12

First Time System Boot Up

To assure the completeness and correctness of your system installation, you may check the above installation steps once again before you boot up your system for the first time.

1. Insert a bootable system floppy disk (DOS 6.2x, Windows 95/98/NT, or others) which contains FDISK and FORMAT utilities into the FDD.

2. Turn on the system power.

3. First, you must use the FDISK utility to create a primary partition of the hard disk. You can also add an extended partition if your primary partition does not use all of the available hard disk space. If you choose to add an extended partition, you will have to create one or more logical partitions to occupy all the space available to the extended partition. The FDISK utility will assign a drive letter (i.e., C:, D:, E:,...) to each partition which will be shown in the FDISK program. After FDISK procedure, reboot your system by using the same system floppy disk.

> Note: DOS 6.2x and Windows 95A can only support up to 2.1GB of HDD partition. If you use the FDISK utility with one of the operating systems mentioned above, you can only device your HDD into partitions no larger than 2.1GB each.

4. Now, use the FORMAT utility to format all the partitions you've created. When formatting the primary partition (C:), make sure to use the FORMAT C: /S command.

> Note: FORMAT C: /S can transfer all the necessary system files into the primary partition of your hard disk. Then, your HDD will become a bootable drive.

5. Install all the necessary drivers for CD-ROM, Mouse, etc.

6. Setup the complete operating system according to your OS installation guide.

Step 13

Install Drivers & Software Components

Please note that all the system utilities and drivers are designed for Win 9x operating systems only. Make sure your Windows 9x operating system is already installed before running the drivers installation CD-ROM programs.

1. Insert the AV64 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.

2. Select the Mainboard related program.

3. Install AV64 Driver for Win9x/Win NT.

3.2 Jumper Settings

Several hardware settings are made through the use of jumper caps to connect jumper pins on the mainboard. Pin #1 is located on the bottom or on the left when holding the mainboard with the keyboard connector or other back-panel connectors opposite from you, as shown below.
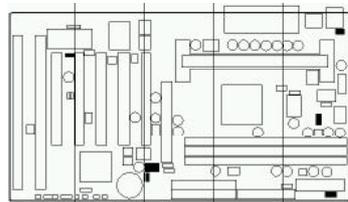
3-pin and multi (> 3) pin jumpers show as follows:
Pin #1 on the left:

Pin #1 on the bottom:

Jumpers with two pins are shown as ▬ for Close [On] or ▪● for Open [Off]. To Short jumper pins, simply place a plastic jumper cap over the desired pair of pins.

Caution!

1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.

2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on top of its original packaging film, on an even surface, and components side up.

3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) whenever handling this equipment.

Jumpers & Connectors Guide

Use the mainboard layout on page 10 to locate CPU socket, memory banks, expansion slots, jumpers and connectors on the mainboard during the installation. The following list will help you identify jumpers, slots, and connectors along with their assigned functions:
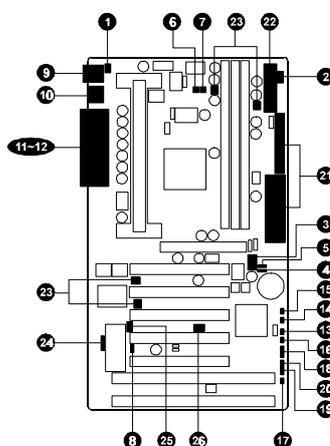
CPU/Memory/Expansion Slots

Slot 1　　　: CPU Slot for Pentium II/III, Celeron processors

J5, J3, J4　: Three DIMM Sockets for 8,16,32,64,128,256MB 3.3V
　　　　　　 SDRAM

AGP　　　　: One AGP (Accelerated Graphics Port) Slot

PCI　　　　 : Five 32-bit PCI Expansion Slots

ISA　　　　 : Two 16-bit ISA Expansion Slots

Jumpers

1 JP38　　　 : Keyboard & PS/2 Mouse Power-On
　　　　　　　 (requires to always set JP38 jumper in order to enable either
　　　　　　　 or both KB & PS/2 mouse power-on functions. In addition,
　　　　　　　 you need to set Power On Function in BIOS setup.)

2 JP39　　　 : CPU Host frequency setting

3 JP37　　　 : CPU Clock Ratio setting

4 JP19　　　 : Clear CMOS

5 JP32　　　 : ICH Voltage setting

6 JP48　　　 : CPU Vcore Fine tune setting

7 J55 & JP45 : Over-Clocking the CPU

8 J44   : BIOS Top Block Lock

Back Panel Connectors

9 KB   : PS/2 Keyboard

9 MS   : PS/2 Mouse

10 USB   : 2 × USB (Universal Serial Bus)

11 COM1   : Serial Port 1 (DB9 male)

11 COM2   : Serial Port 2 (DB9 male)

12 PRINTER   : Parallel Port (DB25 female)

Front Panel Connectors

13 PWON (S1)   : ATX Power On/Off Momentary Type Switch

14 GLED (J48)   : Green LED (ON when system in power savings mode)

15 EPMI (J42)   : Hardware System Management Interface Momentary Type switch.

16 HDD (S3)   : IDE Drive Active LED

17 RST (J32)   : Hardware Reset Switch

18 SPEAKER (JP24) : Housing Internal Speaker

19 PWR LED (J27)   : System Power LED

20 KEYLOCK (J27) : Keylock

Internal Peripherals Connectors

21 FDD   : Floppy Disk Drive Interface

21 IDE1   : IDE Primary Interface (Dual-channel)

21 IDE2   : IDE Secondary Interface (Dual-channel)

Other Connectors

22   : ATX Power (20-pin header)

23 CPU FAN (JP29) : CPU Cooling Fan Power

23 FAN (JP28)   : Housing Cooling Fan Power

23 FAN (J43)   : Housing Cooling Fan Power

23 FAN (J47)   : Housing Cooling Fan Power

24 JP4   : IR Connector

25 J45   : Wake-On-LAN Connector

26 JP46   : SB-LINK Connector

❶ Set Keyboard & PS/2 Mouse Power-On (JP38)

AV64 mainboard provides an easy power-on by keyboard and PS/2 mouse.

> Note: When you enable Keyboard Power-On, you also need to configure the proper hot-key combination < Ctrl> + < function key F1 ~ F12 > in BIOS setup program.

To Power on the system by keyboard, simply strike the proper hot-key. (A hot-key is the combination of < Ctrl> + < configured function key F1 ~ F12>)

To power on the system by PS/2 mouse, you only need to double-click with the mouse. (Note that power-on by serial mouse is not supported)

To enable/disable either or both keyboard and PS/2 mouse power-on functions, follow the steps outlined below:

JP38 1-3, 4-6 (default)
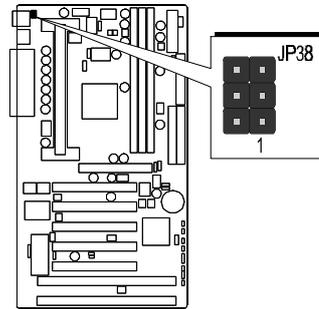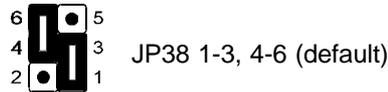
Step 1. Adjust the jumper group JP38 as shown in the following table.

K/B & PS/2 Mouse Power-On - JP38			
Keyboard & PS/2 Mouse Power-On Disabled	Keyboard & PS/2 Mouse Power-On Enabled	Keyboard Power-On Enabled	PS/2 Mouse Power-On Enabled

Step 2. Set the Power On field to the proper value (Hot-key or PS/2 Mouse) in Integrated Peripherals menu of BIOS setup.

❷ CPU Host Frequency hardware Setting (JP39)

Normally, CPU FSB auto-detecting by BIOS, System wil assign proper frequency to CPU, when JP39 set to default position.

We strongly advise novice users not to modify the original setting of the CPU host frequency, for setting an incorrect value may damage your CPU.

For experienced users, the AV64 mainboard provides an alternative Hard-Configure function to adjust your CPU host frequency manually.

Insert mini-jumper caps properly on JP39 to reach desired CPU Host Frequency, as shown in the following table.

System Clock (JP39)	1-2	3-4	5-6	7-8
66 MHz	OFF	OFF	ON	ON
75 MHz	ON	OFF	ON	ON
83 MHz	OFF	ON	ON	ON
100 MHz	OFF	OFF	OFF	ON
112 MHz	ON	OFF	OFF	ON
133 MHz (Default)	OFF	OFF	OFF	OFF
140 MHz	ON	ON	OFF	OFF
150 MHz	ON	OFF	OFF	OFF
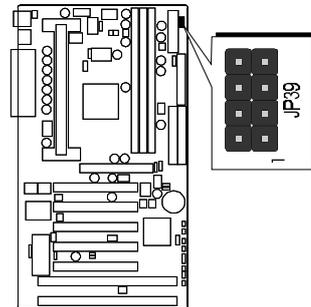
Note: 75, 83 MHz are over-clock usage for 66MHz base processor, 112~103MHz are over-clock usage for 100MHz base processor, and 140MHz~150MHz are over-clock usage for 133 MHz base processor. However, over-clocking is not a recommended practice.

❸ CPU Clock Ratio Setting (JP37)

AV64 mainboard provides a jumper group JP37 to set CPU speed configure by BIOS or by hardware jumper.

By inserting jumper pack on Auto group, the user can Soft-Configure the CPU Host Frequency and CPU Clock Ratio from BIOS.

By removing jumper pack from Auto group and inserting mini jumpers on Manual group properly, the user can configure the CPU Clock Ration manually.
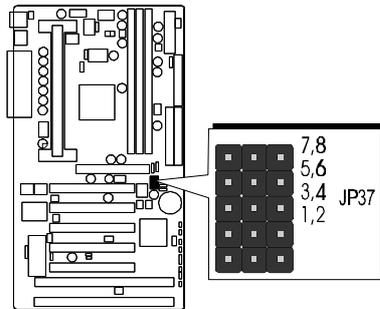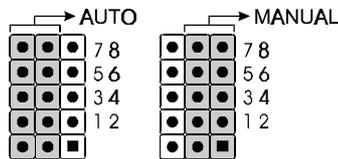
Multiplier (JP37)	1-2	3-4	5-6	7-8	(66) MHz	(100) MHz	(133) MHz
3.5X	ON	OFF	ON	OFF	233	350	
4X	OFF	ON	ON	ON	266	400	533
4.5X	OFF	ON	ON	OFF	300	450	600
5X	OFF	OFF	ON	ON	333	500	667
5.5X	OFF	OFF	ON	OFF	366	550	733
6X	ON	ON	OFF	ON	400	600	
6.5X	ON	ON	OFF	OFF	433	650	
7X	ON	OFF	OFF	ON	466	700	
7.5X	ON	OFF	OFF	OFF	500	750	
8X	OFF	ON	OFF	ON		800	

Processor	233 MHz (66MHz x 3.5)	266 MHz (66MHz x 4)	300 MHz (66MHz x 4.5)	333 MHz (66MHz x 5)	366 MHz (66MHz x 5.5)	400 MHz (66MHz x 6)	433 MHz (66MHz x 6.5)	466 MHz (66MHz x7)	500 MHz (66MHz x 7.5)
System Clock JP39									
Multiplier JP37									

Processor	350 MHz (100MHz x 3.5)	400 MHz (100MHz x 4)	450 MHz (100MHz x 4.5)	500 MHz (100MHz x 5)	550 MHz (100MHz x 5.5)	600 MHz (100MHz x6)	600 MHz (133MHz x4.5)	667 MHz (133MHz x5)	733 MHz (133MHz x5.5)
System Clock JP39									
Multiplier JP37									

❹ Clear CMOS (JP19)

JP19 is used to clear CMOS data. Clearing CMOS will result in permanently erasing the previous system configuration settings and restoring the original (factory-set) system settings.

Pin 1-2 (Default)

Pin 2-3 (Clear CMOS)
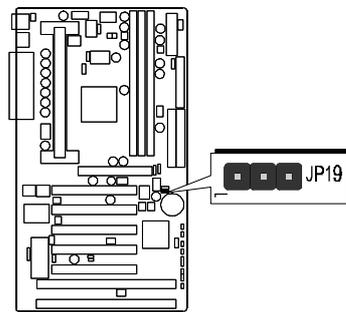
Step 1. Turn off the system power (PC-> Off)

Step 2. Remove jumper cap from JP19 pins 1-2

Step 3. Place the jumper cap on JP19 pin 2-3
for a few seconds

Step 4. Return the jumper cap to pin 1-2

Step 5. Turn on the system power (PC-> On)

❺ ICH Voltage Setting (J32)

This jumper allows you to select the voltage supplied to the VT82C596B. The default voltage should be used unless some IDE devices need more voltage supplied.

Pin 1-2 (3.6V)

Pin 2-3 (3.3V) default
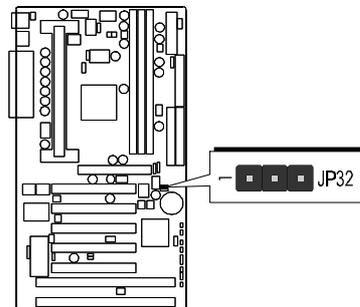
❻ CPU Vcore Fine tune (JP48)

The CPU voltage setting is jumperless. This means that your AV64 mainboard can detect the CPU voltage automatically; therefore, you do not need to configure any voltage jumper.

But, AV64 provide an extra 4-pin jumper to increase CPU core voltage for overspeed usage.

JP48 All open (default)

Increase 0.15% CPU Core Voltage	Increase 0.5% CPU Core Voltage	Increase 1.5% CPU Core Voltage	Increase 7.8% CPU Core Voltage
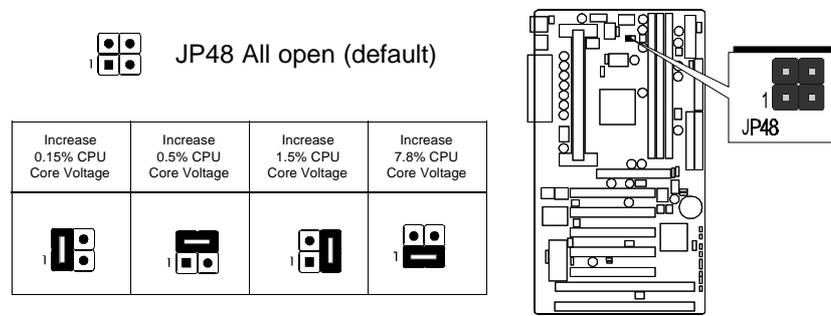
❼ Over-Clocking the CPU (J55 & JP45)

AV64 mainboard provides two special jumpers J55 to over-clock FSB up to 100MHz and JP45 to over-clock FSB up to 133MHz when CPU configuration performed by hard-configure.

J55, JP45 Close (default)

J55 Close (over-clock to 100MHz)

JP45 Close (over-clock to 133MHz)
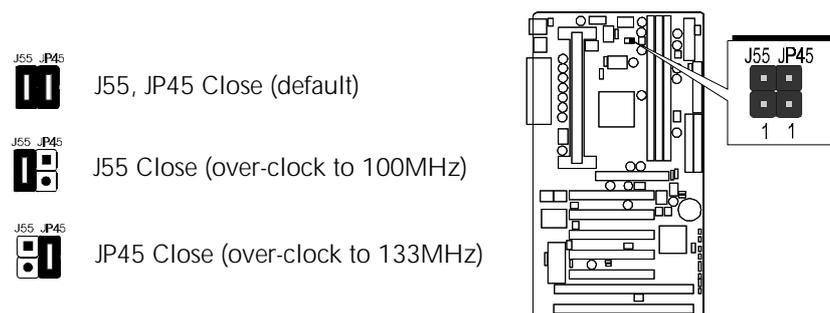
Warning :   Over-clocking is not a recommended practice for it may damage both the mainboard and the processor.

❽ Boot-Block Protection (J44)

J44 is used protect the Boot-Block in BIOS. If the virus infects the Boot-Block section, your system will not be able to boot forever. You may choose close J44 pins 1-2 for Boot-Block protection; however, please close J44 pins 2-3 if yu need to reflash the BIOS. A protected Boot-Block may cause your BIOS reflash failed.

Pin 2-3 (default)
Flash All Block

Pin 1-2
Top Block Lock

1
J44
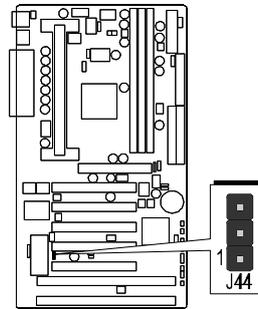
❾ PS/2 Keyboard & PS/2 Mouse Connectors

Two 6-pin female PS/2 keyboard & Mouse connectors are located at the rear panel of the mainboard. Depending on the computer housing you use (desktop or minitower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposed to a minitower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard's. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.

PS/2 Mouse

PS/2 keyboard
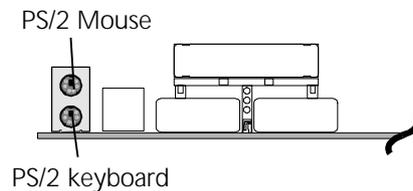
❿ USB1/USB2 Port Connectors

Two female connectors USB1/USB2 share the same USB (Universal Serial Bus) bracket at the rear panel of your mainboard. Plug each USB device jack into an available USB1/USB2 connector.

USB1 & USB2
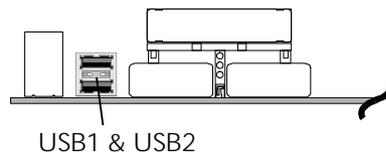
⓫ COM1 / COM2 Connector

This mainboard can accommodate two serial device on COM1/COM2 .

Attach a serial device cable to the DB9 serial port COM1/COM2 at the back panel of your computer.

COM2   COM12
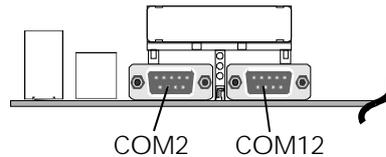
⓬ Parallel Port Connector

One DB25 female parallel connector is located at the rear panel of the mainboard. Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.

Parallel Port
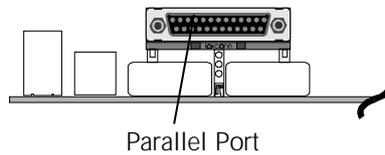
⓭ ATX Power On/Off Switch Connector (PWON - S1)

The Power On/Off Switch is a momentary type switch used for turning on or off the system's ATX power supply. Attach the connector cable from the Power Switch to the 2-pin PWON header on the mainboard.

> Note : Please notice the Speaker
> and all the LED connector is
> directional.   If your chassis's
> LED does not light during
> running, please simply
> change to the opposite
> direction.
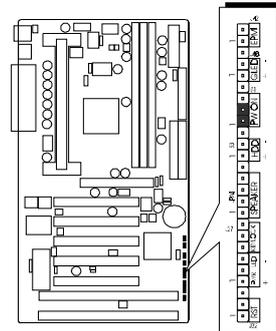
⓮ Green LED Connector (GLED - J48)

The Green LED (GLED) indicates that the system is currently in one of the power savings mode (Doze/Standby/Suspend). When the system resumes to normal operation, mode, the Green LED will go off. Attach a 2-pin Green LED cable to GLED header.
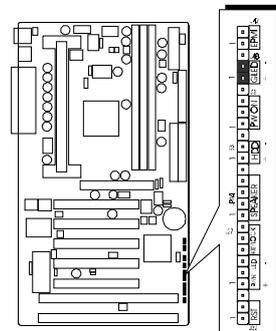
⑮ EPMI Connector (EPMI - J42)

Hardware System Management Interface (EPMI) header may attach to a 2-pin momentary switch. Press the EPMI switch to force the system into power savings mode; press again to resume normal operation.
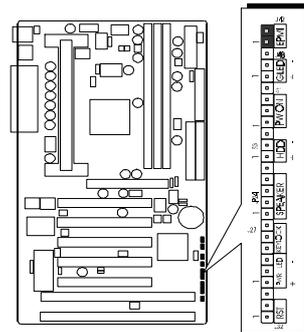
⑯ HDD LED Connector (HDD - S3)

Attach the connector cable from the IDE device LED to the 2-pin HDD LED header. The HDD LED lights up whenever an IDE device is active.
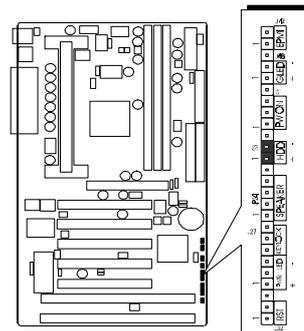
⑰ Hardware Reset Connector (RST - J32)

Attach the 2-pin hardware reset switch cable to the RST header. Pressing the reset switch causes the system to restart.
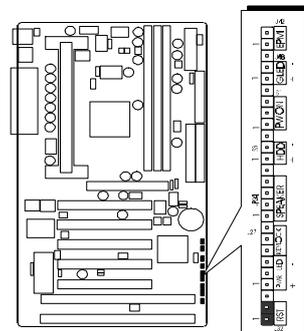
⓲ Speaker Connector (SPEAKER - JP24)

Attach the PC speaker cable from the case to the 4-pin speaker connector (SPK).
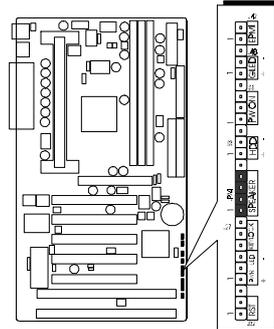
⓳ PWR LED Connector (PWR LED- J27)

Attach the 3-pin Power-LED connector cable from the housing front panel to the PWR header on the mainboard. The power LED stays lit while the system is running.
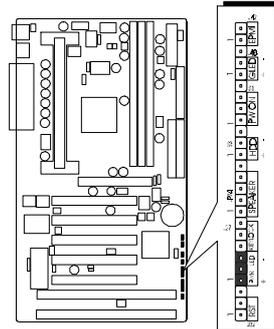
⓴ Keylock Connector (KEYLOCK - J27)

Attach the 2-pin Power-LED connector cable from the housing front panel to the PWR header on the mainboard. The power LED stays lit while the system is running.
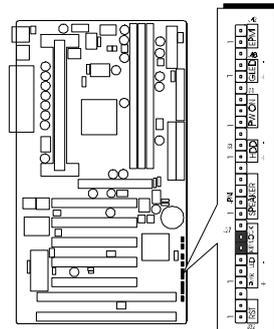
㉑ Enhanced IDE Ports and Floppy Connectors

The AV64 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support for up to four IDE devices, such as CD-ROM and Hard Disk Drives (H.D.D.). This mainboard also includes one 34-pin floppy disk controller (FDC) to accommodate the Floppy Disk Drive (F.D.D.). Moreover, this mainboard comes with one 40pin ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.

> Note :   Please connect your system H.D.D. on IDE 1.

Important: Ribbon cables are directional, therefore, make sure to always connect with the red cable stripe on the same side as pin #1 of the IDE1/IDE2 or FDC connector on the mainboard.
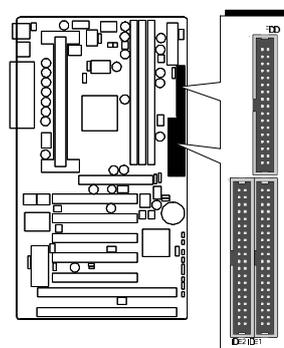
㉒ ATX Power Supply Connector

Locate the 20-pin male header ATX power connector on your mainboard. Plug the power cable from the ATX power supply unit directly into ATX power supply connector.
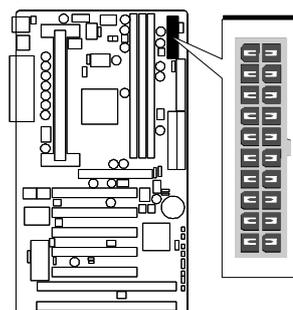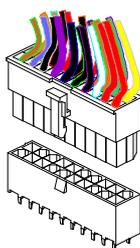
> Note 1: The ATX power connector is directional and will not go in unless the guides match perfectly making sure that pin#1 is properly positioned.
> Note 2: Make sure the latch of the ATX power connector clicks into place to ensure a solid attachment.
> Note 3: This mainboard requires an ATX power supply of at least 200 watts with power good signal.

❷❸ Cooling Fan Connectors for CPU (JP29), Chassis (JP28), (J43) & (J47)

The mainboard provides four onboard 12V cooling fan power connectors to support CPU (JP29), Chassis (JP28), (J43) and (J47) cooling fans.
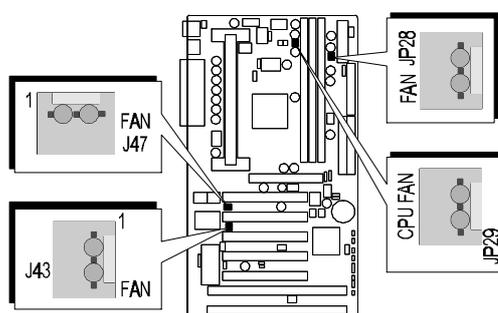
> Note: Both cable wiring and type of plug may vary depending on the fan maker. Keep in mind that the red wire should always be connected to the +12V header and the black wire to the ground (GND) header.

❷❹ IR Connector (JP4)

If you have an Infrared device, this mainboard can implement IR transfer function. To enable the IR transfer function, follow these steps:

IR Pin Assignments:
1 = VCC
2 = CIRRX
3 = IRRX
4 = Ground
5 = IRTX
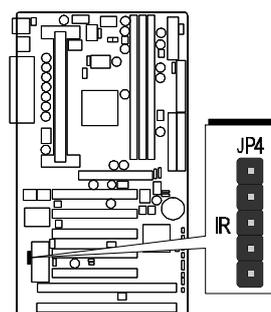
Step 1. Attach the 5-pin infrared device cable to JP4 connector. (Refer to the above diagram for IR pin assignment.)

Step 2. Configure the Infrared transfer mode in the UR2 Mode field of integrated Peripherals menu in BIOS Setup. This mainboard supports IrDA, ASKIR, Normal and SCR transfer modes.

㉕ Wake-on LAN Connector (J45)

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected system through the LAN card.
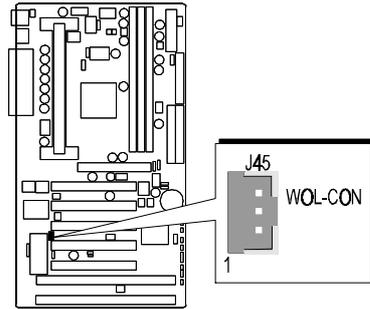
㉖ SB-Link Connector (JP46)

The main board provides a 2x3 pin SB-Link header accepts the Creative CT4600 series PCI sound cards with PCI solution to connect the legacy Sound Blaster compatible audio to the PCI bus.
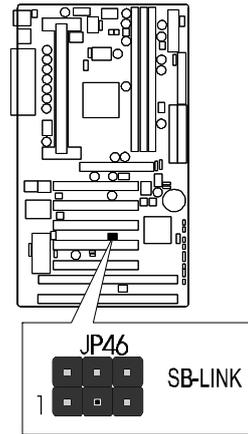
3.3 System Memory Configuration

The AV64 mainboard has three 168-pin DIMM sockets that allow you to install from 16MB up to 768MB of system memory with SDRAM (Synchronous DRAM). Each DIMM (Dual In-line Memory Module) socket can accommodate 16MB, 32MB, 64MB, 128MB, and 256MB 3.3V single or double side SDRAM modules. DIMM sockets are arranged in two banks, each memory bank made of one socket and providing a 64 bit wide data path.

The AV64 mainboard supports data integrity algorithms including EC (Error Checking) and ECC (Error Checking and Correction) in the memory array. In EC mode, single and multiple bit error detection is provided. In ECC mode, when the memory is being read from DRAM, the AV64 provides both error checking and correction of the data.

Install Memory:

Install memory in any or all of the banks and in any combination, as follows.

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIMM 2	16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1
DIMM 3	16MB, 32MB, 64MB, 128MB, 256MB 168-pin 3.3V SDRAM DIMM	x 1

Note: You do not need to set any jumper to configure memory since the BIOS utility can detect the system memory automatically. You can check the total system memory value in the BIOS Standard CMOS Setup menu.

Upgrade Memory:

You can easily upgrade the system memory by inserting additional SDRAM modules in available DIMM banks. The total system memory is calculated by simply adding up the memory in all DIMM banks. After upgrade, the new system memory value will automatically be computed and displayed by the BIOS Standard CMOS Setup menu.

4 SOFTWARE UTILITY

4.1 AV64 Mainboard CD Overview

Note: The AV64 mainboard attachment CD contents are subject to change without notice.

To start your mainboard CD disc, just insert it into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\Autorun.exe (assuming that your CD-ROM drive is drive D:)

Navigation Bar Description:

☞ **Install Mainboard Software** - Installing AV64 Mainboard Drivers for Windows

☞ **Manual** - AV64 series mainboard user's manual in PDF format.

☞ **Link to Shuttle Homepage** - Link to shuttle website homepage.

☞ **Browse this CD** - Allows you to see the contents of this CD.

☞ **Quit** - Close this CD.

4.2 Install Mainboard Driver

Insert the attachment CD into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select using your pointing device (e.g. mouse) on the "**Install Mainboard Software**" bar.

Once you made your selection, a Setup window which automatically runs the installation.

When the files are done copying make sure you **reboot** the system to insure that the files are installed correctly.

4.3 To View the User's Manual

Insert the attachment CD into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select using your pointing device (e.g. mouse) on the "**Manual**" bar.

Then **Online Information** windows will appear on your screen. Click on the "**Install Acrobe Reader 3.0**" bar if you need to install acrobe reader.

Then click on "**AV64 Manual**" bar to view AV64 user's manual.

5 BIOS SETUP

AV64 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:
System date and time
Hardware execution sequence
Power management functions
Allocation of system resources

5.1 Entering BIOS

To enter the BIOS (Basic Input / Output System) utility, follow these steps:

Step 1.   Power on the computer and the system will perform its POST (Power-On Self Test) routine checks.

Step 2.   Press <Del> key immediately or at the following message:
"Press DEL to enter SETUP"
or simultaneously press <Ctrl>, <Alt>, <Esc> keys

Note 1. If you miss the train (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the <RESET> switch located at the computer's front panel. You may also reboot by simultaneously pressing the <Ctrl>, <Alt>, <Del> keys.

Note 2. If you do not press the keys in time and system does not boot, the screen will prompt an error message and you will be given the following options:
"Press F1 to Continue, DEL to Enter Setup"

Step 3. As you enter the BIOS program, the CMOS Setup Utility will prompt you the Main Menu, as shown in the next section.

5.2 The Main Menu

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

```
         CMOS Setup Utility - Copyright (C) 1984-1999 Award Software

    ▸ Standard CMOS Features              ▸ Frequency/Voltage Control

    ▸ Advanced BIOS Features                Load Fail-Safe Defaults

    ▸ Advanced Chipset Features             Load Optimized Defaults

    ▸ Integrated Peripherals                Set Supervisor Password

    ▸ Power Management Setup                 Set User Password

    ▸ PnP/PCI Configurations                Save & Exit Setup

    ▸ PC Health Status                      Exit Without Saving

    Esc : Quit        F9 : Menu in BIOS        ↑ ↓ ←   : Select Item
    F10 : Save & Exit Setup

                       Time, Date, Hard Disk Type...
```

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

Use this menu for basic system configuration.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI.

PC Health Status (optional features)

This entry shows the current system temperature, Voltage and FAN speed.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

✎ Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 catego-
ries. 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.

```
          CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                              Standard CMOS Features

    Date (mm:dd:yy)            Wed, Jan 26 2000          Item Help
    Time (hh:mm:ss)            16 : 53 : 38
                                                     Menu Level    ►
  ► IDE Primary Master         Press Enter None
  ► IDE Primary Slave          Press Enter None        Change the day, month,
  ► IDE Secondary Master       Press Enter None        year and century
  ► IDE Secondary Slave        Press Enter None

    Drive A                    1.44M, 3.5 in.
    Drive B                    None

    Video                      EGA/VGA
    Halt On                    All,But Keyboard

    Base Memory                      640K
    Extended Memory                65472K
    Total Memory                    1024K


  ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
         F5:Previous Values     F6:Fail Safe Defaults    F7:Optimized Defaults
```

Date

< Month >   < DD >   < YYYY >

Set the system date. Note that the 'Day' automatically changes when
you set the date.

Time

< HH : MM : SS >

Set the system time.

IDE Primary Master

Options are in its sub menu.

Press < Enter > to enter the sub menu of detailed options.

IDE Primary Slave

Options are in its sub menu.

Press < Enter > to enter the sub menu of detailed options.

IDE Secondary Master

Options are in its sub menu.

Press <Enter> to enter the sub menu of detailed options.

IDE Secondary Slave

Options are in its sub menu.

Press <Enter> to enter the sub menu of detailed options.

Drive A/Drive B

Select the type of floppy disk drive installed in your system.

➤ The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, 2.88M, 3.5 in

Video

Select the default video device.

➤ The choice: EGA/VGA, CGA 40, CGA 80, MONO

Halt On

Select the situation in which you want the BIOS to stop the POST process and notify you.

➤ The choice: All Errors, No Errors, All, but Keyboard, All, but Diskette, All, but Disk/Key

Base Memory

Displays the amount of conventional memory detected during boot up.

➤ The choice: N/A

Extended Memory

Displays the amount of extended memory detected during boot up.

➤ The choice: N/A

Total Memory

Displays the total memory available in the system.

➤ The choice: N/A

****

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

IDE HDD Auto-detection

Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

➢ Press Enter

IDE Primary Master

Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !

➢ The choice: None, Auto, Manual.

Access Mode

Choose the access mode for this hard disk.

➢ The choice: Normal, LBA, Large, Auto.

Capacity

Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

➢ Auto Display your disk drive size.

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

Cylinder

Set the number of cylinders for this hard disk.

➢ Min = 0, Max = 65535

Head

Set the number of read/write heads.

➢ Min = 0, Max = 255

Precomp

Warning: Setting a value of 65535 means no hard disk.

➢ Min = 0, Max = 65535

Landing zone

Set the Landing zone size.

➢ Min = 0, Max = 65535

Sector

Number of sectors per track.

➢ Min = 0, Max = 255

****

✑ Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

```
       CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                         Advanced BIOS Features
    ┌─────────────────────────────────────────┬───────────────────────┐
    │ Virus Warning              Disabled    ▲ │      Item Help        │
    │ CPU Internal Cache         Enabled       ├───────────────────────┤
    │ External Cache             Enabled       │ Menu Level   ▶        │
    │ CPU L2 Cache ECC Checking  Enabled       │                       │
    │ Processor Number Feature   Enabled       │ Allows you to choose  │
    │ Quick Power On Self Test   Disabled      │ the VIRUS warning     │
    │ First Boot Device          Floppy        │ feature for IDE Hard  │
    │ Second Boot Device         HDD-0         │ Disk boot sector      │
    │ Third Boot Device          LS/ZIP        │ protection. If this   │
    │ Boot Other Device          Enabled       │ function is enabled   │
    │ Swap Floppy Drive          Disabled      │ and someone attempt to│
    │ Boot Up Floppy Seek        Enabled       │ write data into this  │
    │ Boot Up NumLock Status     Off           │ area, BIOS will show a│
    │ Gate A20 Option            Fast          │ warning message on    │
    │ Typematic Rate Setting     Disabled      │ screen and alarm beep │
    │ x Typematic Rate (Chars/Sec)  6          │                       │
    │ x Typematic Delay (Msec)      250        │                       │
    │ Security Option            Setup         │                       │
    │ OS Select For DRAM > 64MB  Non-OS2     ▼ │                       │
    ├─────────────────────────────────────────┴───────────────────────┤
    │ ↑↓:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
    │    F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults │
    └──────────────────────────────────────────────────────────────────┘
```

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

    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 will appear when anything attempts to access the boot sector or hard disk partition table.

➢ The choice: Enabled, Disabled.

CPU Internal Cache

This item enables CPU external cache to speed up memory access.

➢ The choice: Enabled, Disabled.

CPU Internal Cache

This item enables CPU secondary cache to speed up memory access.

➤ The choice: Enabled, Disabled.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enable when the external cache contains ECC SRAMs.

➤ The choice: Enabled, Disabled.

Processor Number Feature

Allows you to Enabled/Disabled, the processor serial number.

➤ The choice: Enabled, Disabled.

Quick Power On Self Test

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

➤ The choice: Enabled, Disabled.

First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

➤ The Choice: Floppy, LS/ZIP, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, LAN, Disabled.

Boot Other Device

Select Your Boot Device Priority.

➤ The Choice: Enabled, Disabled.

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

➤ The choice: Enabled, Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

➢ The choice: Enabled, Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

➢ The choice: Off, On.

Gate A20 Option

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

➢ The choice: Normal, Fast.

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

➢ The choice: Enabled, Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

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

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

➢ The choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter 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.

➢ The choice: System, Setup.

> 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.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

➢ The choice: Non-OS2, OS2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

➢ The choice: Enabled, Disabled.

C8000-CBFFF Shadow/DC000-DFFFF Shadow

These categories determine whether option ROMs will be Chipset Features Setup Auto Configuration copied to RAM. An example of such option ROM would be support of on-board SCSI.

➢ The choice: Enabled, Disabled.

✎ Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered.

The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

```
          CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                          Advanced Chipset Features

      Bank 0/1 DRAM Timing        SDRAM 10ns       ▲       Item Help
      Bank 2/3 DRAM Timing        SDRAM 10ns
      Bank 4/5 DRAM Timing        SDRAM 10ns            Menu Level    ▶
      SDRAM  Cycle Length         3
      DRAM Clock                  Host CLK
      Memory Hole                 Disabled
      P2C/C2P Concurrency         Enabled
      Fast R-W Turn Around        Disabled
      System BIOS Cacheable       Disabled
      Video RAM Cacheable         Disabled
      AGP Aperture Size           64M
      AGP-4X Mode                 Enabled
      OnChip USB                  Disabled
    x USB Keyboard Support        Disabled
      Wake Up On LAN              Disabled
      CPU to PCI Write Buffer     Enabled
      PCI Dynamic Bursting        Enabled
      PCI Master 0 WS Write       Enabled
      PCI Delay Transaction       Enabled         ▼

    ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
         F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Bank x/x DRAM Timing

This value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMS or EDO DRAMS.

➢ The choice: SDRAM 10ns, SDRAM 8ns, Normal, Medium, Fast, Turbo.

SDRAM Cycle Length

This field allows you to set the SDRAM latency timer.

➢ The choice: 2, 3.

DRAM Clock

This item set the DRAM Read/Write timings that the system uses.

➢ The choice: Host CLK, HCLK-33M, HCLK+33M.

Memory Hole

In order to improve performance, some space in memory can be reserved for ISA cards.

➢ The choice: Disabled, 15M-16M.

P2C/C2P Concurrency

This item allows you to enabled/disabled the PCI to CPU, CPU to PCI concorrency.

➢ The choice: Enabled, Disabled.

Fast R-W Turn Around

This item controls the DRAM Timing. It allows you to enabled/Disabled the fast read/write turn around.

➢ The choice: Enabled, Disabled.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

➢ The choice: Enabled, Disabled.

Video RAM Cacheable

This is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must leave this on the default setting of *Disabled* if your display card cannot support this feature or else your system may not boot.

➢ The choice: Enabled, Disabled.

AGP Aperture Size (MB)

This item allows the user to set memory-mapped, graphics data structures can reside in Graphics Aperture.

➢ The choice: 4M, 8M, 16M, 32M, 64M, 128M.

AGP-4X Mode

This item allows you to enable/disable AGP-4X function. See www.apgforum.org for AGP information.

➢ The choice: Enabled, Disabled.

On Chip USB

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

➢ The choice: Enabled, Disabled.

USB Keyboard Support

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

➢ The choice: Enabled, Disabled.

Wake Up On LAN

This item determine the system will resume by activity of LAN. If enabled this feature system will power-on itself from power off when the activity of LAN.

➢ The choice: Enabled, Disabled.

CPU to PCI Write Buffer

When enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

➢ The choice: Enabled, Disabled.

PCI Dynamic Bursting

When Enabled, data transfers on the PCI bus, where possible, make use of the high performance PCI burst protocol, in which greater amounts of data are transferred at a single command.

➢ The choice: Enabled, Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus are command with zero wait states.

➢ The choice: Enabled, Disabled.

PCI Delay 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.

PCI #2 Access #1 Retry

This item allows you enable/disable the PCI #2 Access #1 Retry.

➢ The choice: Enabled, Disabled.

AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

➢ The choice: Enabled, Disabled.

AGP Master 1 WS Read

This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

➢ The choice: Enabled, Disabled.

Memory Parity/ECC Check

This item enabled to detect the memory parity and error checking & correcting.

➢ The choice: Enabled, Disabled.

✎ *Integrated Peripherals*

```
        CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                          Integrated Peripherals

  OnChip IDE Channel0        Enabled       ▲        Item Help
  OnChip IDE Channel1        Enabled
  IDE Prefetch Mode          Enabled            Menu Level    ▸
  Primary Master    PIO      Auto
  Primary Slave     PIO      Auto
  Secondary Master PIO       Auto
  Secondary Slave  PIO       Auto
  Primary Master    UDMA     Auto
  Primary Slave     UDMA     Auto
  Secondary Master UDMA      Auto
  Secondary Slave  UDMA      Auto
  Init Display First         PCI Slot
  IDE HDD Block Mode         Enabled
  POWER ON Function
  KB Power ON Password       Enter
  Hot Key Power ON           Ctrl-F1
  KBC input clock            8 MHz
  Onboard FDC Controller     Enabled
  Onboard Serial Port 1      3F8/IRQ4      ▼

 ↑↓:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults
```

OnChip IDE Channel0

This item is used to defined on chip Primary PCI IDE controller is Enable or Disable setting.

➢ The choice: Enabled, Disabled.

OnChip IDE Channel1

This item is used to defined on chip Secondary PCI IDE controller is Enable or Disable setting.

➢ The choice: Enabled, Disabled.

IDE Prefetch Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above is Disabled.

➢ The choice: Enabled, Disabled.

Primary Master / Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are *0, 1, 2, 3, 4,* and *AUTO* is the default settings for on board Primary Master / Slave PIO timing.

➢ The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Secondary Master / Slave PIO

In this items, there are five modes defined in manual mode and one automatic mode. There are *0, 1, 2, 3, 4,* and *AUTO* is the default settings for on board Secondary Master / Slave PIO timing.

➢ The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

Primary Master / Slave UDMA

On this mainboard, AV11 PCIset improves IDE transfer rate using Bus Master UltraDMA 33/66 IDE which can handle data transfer up to 33MB/sec. *Auto* is the default settings for on board Primary Master / Slave *UltraDMA 33/66.*
Note : Your hard drive must also support UDMA for this feature to work.

➢ The choice: Auto, Disabled.

Secondary Master / Slave UDMA

On this mainboard, AV64 PCIset improves IDE transfer rate using Bus Master UltraDMA 33/66 IDE which can handle data transfer up to 33MB/sec. *Auto* is the default settings for on board Secondary Master / Slave *UltraDMA 33/66.*
Note : Your hard drive must also support UDMA for this feature to work.

➢ The choice: Auto, Disabled.

Init Display First

This item is used to determine initial device when system power on.
➢ The choice: AGP, PCI Slot.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

➢ The choice: Enabled, Disabled.

POWER ON Function

This item is used to defined Keyboard & PS/2 mouse power-on function enabled or disabled.

➢ The choice: Password, Hot KEY, Mouse Left, Mouse Right, Button Only, keyboard 98.

Note:1. When item of PS/2 Mouse or HOT-Key is selected, please also adjust jumper JP38 to the proper position.
   2. USB keyboard, USB Mouse and Serial Mouse are not supported to this function.

KB Power On Password

Power-on by soft-on/off.

➢ The choice: Enter.

Hot Key Power ON

Power-on by soft-on/off button and keyboard are available.

➢ The choice: < Ctrl > < F1 > to < Ctrl > < F12 > .

KBC Input Clock

This item to set the input clock to onboard keyboard controller.

➢ The choice: 6MHz, 8MHz, 12MHz, 16MHz.

Onboard FDC Controller

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the "*Disabled*" settings if you have a separate control card.

➢ The choice: Enabled, Disabled.

Onboard Serial Port 1

This item is used to define onboard serial port 1.

➤ The choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto, Disabled.

Onboard Serial Port 2

This item is used to define onboard serial port 2.

➤ The choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto, Disabled.

UART Mode Select

The main board support IrDA(HPSIR) and Amplitudes Shift Keyed IR(ASKIR) infrared through COM 2 port.

Note : FIR is not available currently.

➤ The choice: IrDA, ASKIR, Normal.

UART2 Duplex Mode

This item specifies onboard infrared transfer mode to full-duplex. This item will not show up when IrDA, ASKIR modes are selected.

➤ The choice: Full, Half.

RxD, TxD Active

This item specifies the Active level for RxD & TxD signal.

➤ The choice: Hi, Hi, Hi, Lo, Lo, Hi, Lo, Lo.

IR Transmittion delay

This item enable/disable the delay of the IR state change from Rx to Tx mode or Tx to Rx mode.

➤ The choice: Enabled, Disabled.

Onboard Parallel Port

This item specifies onboard parallel port address to *378H, 278H, 3BCH* or *Disabled.*

Parallel Port Mode

This item specifies onboard parallel port mode. The options are *SPP* (Standard Parallel Port), *EPP*(Enhanced Parallel Port), *ECP* (Extended Capabilities Port), and *EPP+ECP.*

ECP Mode Use DMA

This item specifies *DMA* (Direct Memory Access) channel when ECP device is in use. The options are *DMA 1* and *DMA 3.* This item will not show up when SPP and EPP printer mode is selected.

➢ The choice: 1, 3

EPP Mode Select

This item select the EPP Mode.

➢ The choice: EPP1.7, EPP1.9.

POWER After PWR-Fail

This item to set the ATX power supply status when power resume after unexpected power fail. When off is selected, power supply will maintain on soft-off status, when power is resume. When on is selected, power supply will turn on, and when former-sts is selected, power supply will maintain on the status before unexpected power fail.

➢ The choice: On, Former-Sts, Off.

✎ Power Management Setup

```
        CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                         Power Management Setup
   ┌──────────────────────────────────────────┬─────────────────────┐
   │  ACPI function             Enabled        │      Item Help       │
   │ ▶ Power Management         Press Enter     │                     │
   │  PM Control by APM         Yes            │  Menu Level    ▶     │
   │  Video Off Option          Suspend        │                     │
   │  Video Off Method          V/H SYNC+Blank  │                     │
   │  MODEM Use IRQ             3              │                     │
   │  Soft-Off by PWRBTN        Instant-Off     │                     │
   │  Modem Ring Resume         Disabled       │                     │
   │  RTC Alarm Resume          Disabled       │                     │
   │ x Date (of Month)          0              │                     │
   │ x Resume Time (hh:mm:ss)   0    0    0     │                     │
   │                                            │                     │
   │                                            │                     │
   │                                            │                     │
   ├──────────────────────────────────────────┴─────────────────────┤
   │ ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5:Previous Values    F6:Fail-Safe Defaults   F7:Optimized Defaults │
   └──────────────────────────────────────────────────────────────────┘
```

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

➢ The choice: Enabled, Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode, Suspend Mode

Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1hr., and HDD Power Down = 15 min.
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.

➢ The choice: Min Saving, Max Saving, User Define.

PM Control by APM

If this item set to *No*, system BIOS will be ignored and APM calls the power to manage the system.
If this item setup to *Yes*, system BIOS will wait for APM's prompt before it enter any PM mode e.g. *DOZE, STANDBY* or *SUSPEND.*

➢ The choice: Yes, No.

Video Off Option

This item define when to activate the video off feature for monitor power management.

➢ The choice: Suspend, Doze, N/A.

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   Initial display power management signaling.

➢ The choice: V/H SYNC+Blank, Blank Screen, DPMS Support.

MODEM Use IRQ

This item determines the IRQ in which the MODEM can use.
The choice: 3, 4, 5, 7, 9, 10, 11, N/A.

Soft-Off by PWRBTN

The setting of **Instant-Off** allows the ATX switch to function as a normal system power off button when pressed for less than 4 seconds. The setting of **Delay 4 Sec.** Allows the button to have a dual function where to press the button for less than 4 seconds will place the system in suspend mode, and pressing the button for more than 4 seconds will shut place the system off.

➤ The choice: Instant-Off, Delay 4 Sec.

Modem Ring Resume

When set to Enabled, any event occurring Modem Ring/activity of LAN will awaken a system which has been powered down.

➤ The choice: Enabled, Disabled.

RTC Alarm Resume

When set to Enabled RTC Alarm Resume, you could set the date (of month) and timer (hh:mm:ss), any event occurring at RTC will awaken system which has been powered down.

➤ The choice: Enabled, Disabled.

Date (of Month) Alarm

This item select the alarm date.

➤ Key in a DEC number: Min=0, Max=31.

Time (hh : mm : ss) Alarm

This item select the alarm time.

✎ *PnP/PCI Configuration*

```
          CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                              PnP/PCI Configurations
┌─────────────────────────────────────────────┬──────────────────────────┐
│  PNP OS Installed          No                │       Item Help          │
│  Reset Configuration Data  Disabled          │                          │
│                                              │  Menu Level   ▶          │
│  Resources Controlled By   Auto(ESCD)        │                          │
│ x IRQ Resources            Press Enter       │  Select Yes if you are   │
│ x DMA Resources            Press Enter       │  using a Plug and Play   │
│                                              │  capable operating       │
│  PCI/VGA Palette Snoop     Disabled          │  system Select No if     │
│  Assign IRQ For VGA        Enabled           │  you need the BIOS to    │
│  Assign IRQ For USB        Enabled           │  configure non-boot      │
│  PCI Latency Timer(CLK)     32               │  devices                 │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ ↑↓:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5:Previous Values     F6:Fail-Safe Defaults    F7:Optimized Defaults   │
└─────────────────────────────────────────────────────────────────────────┘
```

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

PNP OS Installed

This item allows you to determine install PnP OS or not.

➢ The choice: Yes, No.

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 .

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. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a " > ").
➢ The choice: Auto(ESCD), Manual.

IRQ/DMA Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
➢ The Choice: Reserved, PCI Device.

DMA 0/1/3/5/6/7 assigned to

These items allow you to determine the DMA assigned to the ISA bus and is not available for PCI slot.
➢ The choice: Legacy ISA, PCI/ISA PnP.

PCI/VGA Palette Snoop

Leave this field at Disabled.
➢ The Choice: Enabled, Disabled.

Assign IRQ For VGA

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.
➢ The choice: Enabled, Disabled.

Assign IRQ For USB

This item allows the user the option to assign an IRQ to on-board USB controller.

Since the on-board controller is always enabled, if no IRQ is assigned to it, there will be a question mark report on the system device under Windows 95/98.
➢ The choice: Enabled, Disabled.

PCI Latency Timer (CLK)

The number of clocks programed in the PCI Latency Timer represents the guaranteed time slice allocated to the VT82C694X, after which it must complete the current data transfer phase and surrender the bus as soon as its bus grant is removed.

The PCI Latency Timer is used to guarantee to the PCI agents a minimum amount of the sytem resource.

➢ The Choice: 0 ~ 255.

✎ *PC Health Status*

```
        CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                              PC Health Status

  CPU Warning Temperature    Disabled              Item Help
  Current System Temp.
  Current CPU1 Temperature                      Menu Level  ►
  Current CPUFAN1 Speed
  Current CPUFAN2 Speed
  Current CPUFAN3 Speed
  IN0(V)
  IN1(V)
  IN2(V)
  + 5 V
  +12 V
  -12 V   -
  - 5 V   -
  Shutdown Temperature       60°C/140°F




  ↑↓←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values     F6:Fail-Safe Defaults   F7:Optimized Defaults
```

Note: This screen will be shown up if optional features available.

CPU Warning Temperature

Since the mainboard support CPU temperature monitoring and over-hear alert. This item allows the user to set the threshold of CPU warning temperature. When CPU temperature over the threshold, system will slow down clock to prevent CPU damage.

➢ The choice: Disabled, 50°C/122°F, 53°C/127°F, 56°C/133°F, 60°C/140°F, 63°C/145°F, 66°C/151°F, 70°C/158°F.

Current System Temp

Since the mainboard support System temperature monitoring and overheat alert. This item indicate the current main board temperature.

Current CPU1 Temperature

Since the mainboard support CPU temperature monitoring and overheat alert. This item indicate the current Processor temperature.

Current CPU1/2/3 FAN Speed

The mainboard can detect three fans rotation speed for CPU cooler.

IN0(V) ~ IN2(V), +5V ~ -5V

The mainboard support CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the voltages output of the voltage regulators and power supply.

Shutdown Temperature

Select the combination of lower and upper limits for the system shut-down temperature, if your computer contains an environmental moni-toring system. If the temperature extends beyound either limit, the system shuts down.

➢ The choice: Disabled, 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F.

✎ Frequency/Voltage Control

```
         CMOS Setup Utility - Copyright (C) 1984-1999 Award Software
                        Frequency/Voltage Control
   ┌─────────────────────────────────────────┬─────────────────────────┐
   │ Auto Detect DIMM/PCI Clk    Disabled     │       Item Help         │
   │ Spread Spectrum             Disabled     │                         │
   │ CPU Host Clock (CPU/PCI)     66/33 MHz    │  Menu Level    ▶        │
   │ CPU/PCI Clock Ratio          x3.5         │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   │                                           │                         │
   ├───────────────────────────────────────────────────────────────────┤
   │ ↑↓→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │     F5:Previous Values    F6:Fail-Safe Defaults   F7:Optimized Defaults      │
   └───────────────────────────────────────────────────────────────────┘
```
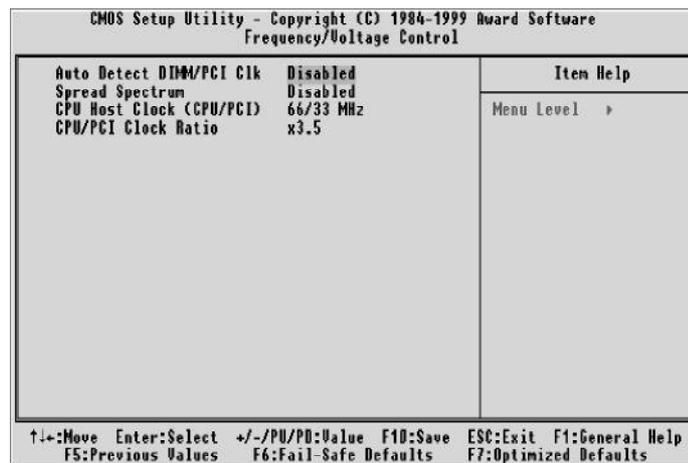
Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.

➢ The choice: Enabled, Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

➢ The choice: Disabled, 0.25%, 0.5%.

CPU Host Clock (CPU/PCI)

➢ The choice: Default, 66/33MHz ~ 150/37MHz.

CPU/PCI Clock Ratio

This item allows the user to adjust CPU Host Clock/Internal Clock ration when JP37 is set to Auto.
The user may adjust CPU Clock Ratio from x2 to x8.

This item will not show up when JP37 is set to Manual.

➢ The choice: x2, x2.5, x3, x3.5, x4, x4.5, x5, x5.5, x6, x6.5, x7, x7.5, x8.

✎ Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

✎ Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

✎ Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

```
           CMOS Setup Utility - Copyright (C) 1984-1999 Award Software

    ▸ Standard CMOS Features              ▸ Frequency/Voltage Control

    ▸ Advanced BIOS Features                Load Fail-Safe Defaults

    ▸ Advanced Chipset Features             Load Optimized Defaults

    ▸ Integrated Peripherals                Set Supervisor Password

    ▸ Power Management Setup                 Set User Password

    ▸ PnP/PCI Configurati┌─────────────────────┐t Setup
                         │  Enter Password:    │
    ▸ PC Health Status   └─────────────────────┘ut Saving

    Esc : Quit     F9 : Menu in BIOS      ↑↓ ←  : Select Item
    F10 : Save & Exit Setup

                      Change/Set/Disable Password
```

Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

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 Setup freely.

Password Disable

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

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS, please refer to page 29 "Clear CMOS".

✍ Save & Exit Setup

Pressing < Enter > on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

✍ Exit Without Saving

Pressing < Enter > on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.