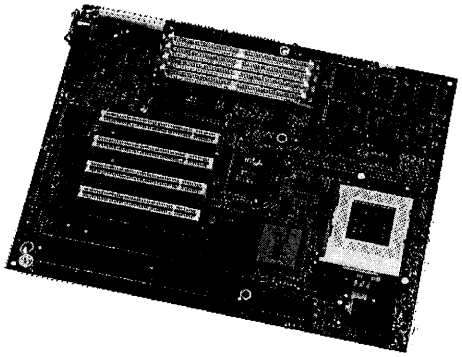
1.54mm

Megastar AI5TV



Download Area

Specifications

Processor	**Pentium 75~200MHz**
Chipset	INTEL 82430VX
Cache Size	256K/512K KB (P.B. SRAM Only)
BIOS	Licenced BIOS
Memory Size	Up to 128MB, Fast Page Mode or EDO RAM
Memory Type	Four 12-pin SIMM
Slots	Four PCI 2.1 Slots, Three ISA Slots
IDE	INTEL 82371SB Master Mode IDE
Onboard I/O	Winbond 83877F, Two 16550 UARTS, EPP/ECP, USB
Size (W X L)	218.44 X 279.4mm
Form	Baby AT

BACKWARD

1.54mm

1.54mm

Megastar Pentium Motherboard

AI5TV v1.20 & v1.30 Jumper Setting

For Intel CPUs

CPU	SW3 (v1.20)	SW3 (v1.30)	SW4	SW5	SW6	SW7	SW8
Pentium 75	OFF	ON	OFF	OFF	OFF	ON	ON
Pentium 90	OFF	ON	OFF	OFF	OFF	ON	OFF
Pentium 100	OFF	ON	OFF	OFF	OFF	OFF	ON
Pentium 120	OFF	ON	OFF	OFF	ON	ON	OFF
Pentium 133	OFF	ON	OFF	OFF	ON	OFF	ON
Pentium 150	OFF	ON	OFF	ON	ON	ON	OFF
Pentium 166	OFF	ON	OFF	ON	ON	OFF	ON
Pentium 200	OFF	ON	OFF	ON	OFF	OFF	ON

For AMD K5/K6 CPUs

CPU	SW3 (v1.20)	SW3 (v1.30)	SW4	SW5	SW6	SW7	SW8
K5-P75	OFF	ON	OFF	OFF	OFF	ON	ON
K5-P90	OFF	ON	OFF	OFF	OFF	ON	OFF
K5-P100	OFF	ON	OFF	OFF	OFF	OFF	ON
K5-P120	OFF	ON	OFF	OFF	ON	ON	OFF

1.54mm

1.54mm

K5-P133	OFF	ON	OFF	OFF	ON	OFF	ON
K5-P166	OFF	ON	OFF	ON	ON	OFF	ON
K6-P200	OFF	ON	OFF	ON	OFF	OFF	ON

For Cyrix 6x86, 6x86L CPUs

CPU	SW3 (v1.20)	SW3 (v1.30)	SW4	SW5	SW6	SW7	SW8
6x86 P120+ (100MHz)	OFF	ON	OFF	OFF	ON	ON	ON
6x86 P133+ (110MHz)	OFF	XX	OFF	OFF	ON	OFF	OFF
6x86 P133+ (110MHz)	XX	OFF	OFF	OFF	ON	ON	ON
6x86 P150+ (120MHz)	OFF	ON	OFF	OFF	ON	ON	OFF
6x86 P166+ (133MHz)	OFF	ON	OFF	OFF	ON	OFF	ON

SW1: AT Bus Clock Select (AT Clock Select)

SW1	AT Clock
OFF	PCI Clock/3
ON	PCI Clock/4 - *(default setting)*

SW2, JP25: CPU Voltage Select

SW2	JP25	CPU Type	Vcore	Vio
ON	ON	Intel Pentium (P54C) Cyrix 6x68, AMD K5	3.5v	3.5v
OFF	OFF	Intel Pentium MMX (P55C) Cyrix 6x86L, AMD K6	2.8v	3.3v

W6: CMOS RAM Dischange

1.54mm

1.54mm

W6	Function
OFF	Normal Operation
ON	Clear CMOS content

JP4: Flash ROM BIOS Voltage Select

JP4	Flash ROM Type
1 - 2	12V Programming (Intel brand)
2-3	5V Programming (SST brand)

AI5TV
User's Manual
Version 1.3D

Contents

Chapter 1 Specifications

The AI5TV is a high performance PCI system board. It's highly flexible in CPU frequency, L2 cache type and size, and main memory type and size. The main features are listed as follows:

Main Processor

Intel Pentium 75/90/100/120/133/150/166/200
Cyrix 6x86 P120$^+$/P133$^+$/P150$^+$/P166$^+$
AMD K5 PR75/PR90/PR100/PR120/PR133

Processor Upgrade

Intel P6 based Over Drive

L2 Cache

Size: 256K or 512K
Type: Pipelined Burst Synchronous SRAM onboard or Module.

Main Memory

4x72-pin SIMM sockets and 1x168-pin DIMM socket
Up to 128MB of total main memory using FPM or EDO
Up to 64MB using SDRAM
SIMM Size: 4MB, 8MB, 16MB or 32MB SIMMs
SIMM Type: Fast page mode or Extended Data Out (EDO)
DIMM Size: 8MB, 16MB, 32MB or 64MB
DIMM Type: SDRAM (Synchronous DRAM)

Chipset

Intel 82430VX chipset with built- in PCI-EIDE

BIOS

Licensed BIOS with additional features:

- ISA Plug and Play (PnP) extension
- Power management: Advanced Power Management (APM) 1.2 compliant
- Symbios (NCR) 53C810 SCSI BIOS

Expansion Slots

Four PCI slots*
Three ISA slots*

* One shared slot

Onboard I/O

Winbond 877 Supper I/O for two serial ports (16550 UART compatible) and one parallel port (ECP/EPP compatible) and one floppy interface that support up to 2.88MB floppy drives.

Chapter 2 Hardware Description

This chapter briefly describes each of the major features of the AI5TV system board. The layout of the board is shown in *Figure 1* which shows the locations of key components. The topics covered in this chapter are as follows:

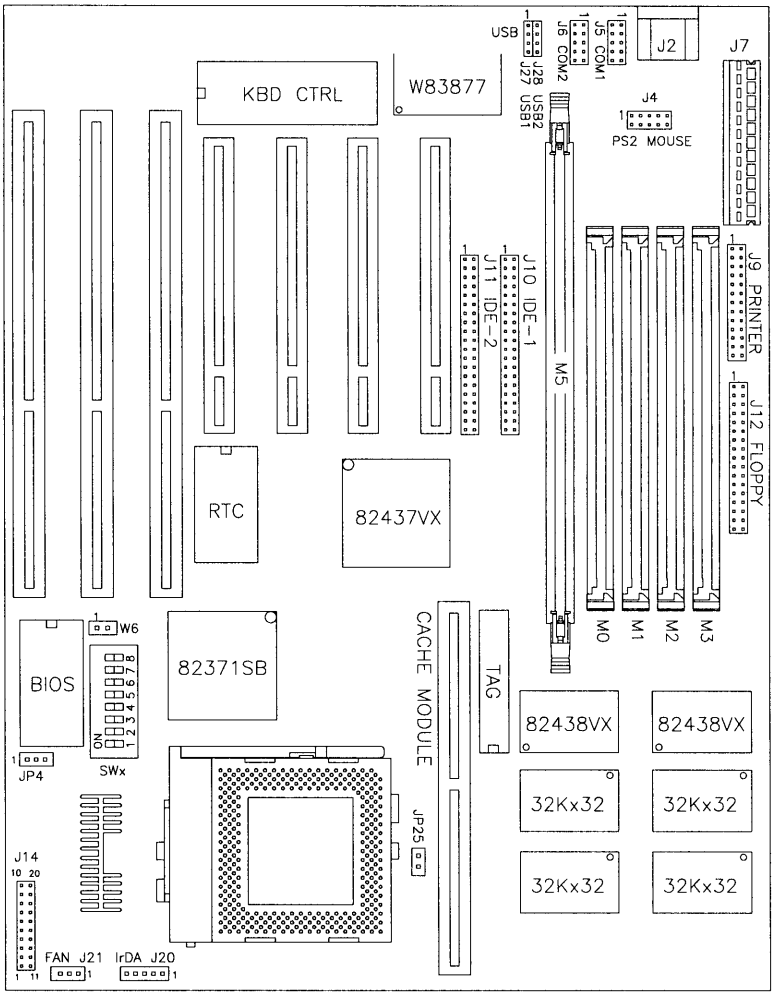


Figure 1: Layout of the AI5TV

2.1 Processor

The AI5TV is designed to take a Pentium processor with a bus speed of 50, 60 and 66 MHz. Since the internal clock of the CPU can be multiples of 1.5, 2, 2.5 or 3 of the bus clock, the CPU frequency can be 75MHz to 200MHz.

2.2 L2 Cache and Cache Module Connector

The AI5TV supports Pipelined Burst Synchronous Cache 256K or 512K. The P.B. Synchronous Cache boost the system performance 10% higher than regular Asynchronous Cache.

2.3 Main Memory

The AI5TV provides two 64-bit memory banks for up to 128MB. Each bank consist of two SIMM sockets, M0/M1 and M2/M3. Both EDO and page mode DRAMs are supported. The size of the SIMMs can be 4MB, 8MB, 16MB or 32MB.

Each 64-bit memory bank can also be populated by using a DIMM (Dual In-line Memory Module). The DIMM size can be 8mb, 16MB, 32MB or 64MB. The DIMM types can be FPM, EDO or SDRAM (synchronous DRAM). Since SIMMs are not available in SDRAM, DIMMs must be used for SDRAM support.

The following are the important factors for populating the SIMM sockets:

1. Either M0/M1 or M2/M3 bank can be populated first
2. Each bank should consist of the same size SIMMs
3. Each bank should consist of the same type SIMMs.
   ex: M0 and M1 should both be EDO or page mode.
4. SIMMs can be mixed by the bank.
   ex: M0/M1 are page mode and M2/M3 are EDO
5. If M2/M3 are occupied, then M5 can not be populated. The reverse is also true.

Bank0(M0, M1)	Bank1(M2, M3)	Total Memory
4MB	-----	8MB
8MB	-----	16MB
16MB	-----	32MB
32MB	-----	64MB
4MB	4MB	16MB
4MB	8MB	24MB
4MB	16MB	40MB
4MB	32MB	72MB
8MB	8MB	32MB
8MB	16MB	48MB
8MB	32MB	80MB
16MB	16MB	64MB
16MB	32MB	96MB
32MB	32MB	128MB

*Note: Bank0 designates the memory bank populated first which can be **M0/M1** or **M2/M3**.*

Bank 0 (M5)	Total Memory
8MB	8MB
16MB	16MB
32MB	32MB
64MB	64MB

2.4 BIOS

The BIOS on the AI5TV system board provides the standard BIOS functions plus the following additional features:

1. ISA Plug and Play (PnP) extension

Unlike PCI cards which are plug and play, ISA cards require setting jumpers to resolve hardware conflict. To make a computer system PnP, an ISA PnP standard is established and supported by new OSes, such as Windows 95. Under Windows 95, the system board BIOS must have ISA PnP extension to support the new ISA PnP cards.

2. Power management

The power management feature provides power saving by slowing down the CPU clock, turning off the monitor screen, and stopping the HDD spindle motor.

3. NCR 53C810(AHA7850) SCSI BIOS

NCR 53C810(AHA7850) is a PCI SCSI shipped from NCR (Adaptec). The BIOS required to run cards with the 53C810(AHA7850) chip is built-in the system BIOS. The BIOS will automatically detect the existence of an 53C810 (AHA7850) chip and configure it accordingly.

2.5 I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port address which also becomes the identity of the device. There are a total of 1K port address space available. The following table list the I/O port address used on the system board.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
2F8h - 2FFh	Serial Port #2(COM2)
378h - 3FFh	Parallel Port #1(LPT1)
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

2.6 DMA Channels

There are seven DMA Channels available on the system board. Only DRQ2 is used by the floppy controller. In the case that ECP mode on parallel port is used, DRQ1 or DRQ3 will be used.

2.7 Interrupt Request Lines (IRQ)

There are a total of 15 IRQ lines available on the motherboard. Peripheral devices use interrupt request to notify CPU for the service required. The following table shows the IRQ used by the devices on the motherboard:

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Parallel Port #2
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Software Redirected to Int 0Ah
IRQ10	Reserved
IRQ11	Reserved
IRQ12	Reserved
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

2.8 Onboard PCI-EIDE

The PCI-EIDE controller is part of the 430VX PCIset. It supports PIO mode 3/4 and bus mastering . The peak transfer rate of PIO mode 3/4 can be as high as 17MB/sec. Using HDDs that support bus mastering, the peak transfer rate can reach 22MB/sec.

There are two IDE connectors, primary IDE and secondary IDE. With two devices per connector, up to four IDE drives are supported.

2.9 Onboard Multi-I/O

The onboard multi-I/O chip, Winbond W83877, provides two serial port, one parallel port and one floppy controller. The serial ports are 16550 UART compatible. The parallel port supports high speed EPP/ECP mode.

The floppy controller supports up to 2.88 MB format. The I/O port addresses of the serial and parallel ports are programmable via BIOS set-up. Each I/O can be individually disabled.

Chapter 3 Configuring the AI5TV

The following sections describe the necessary procedures and proper jumper settings to configure the AI5TV motherboard.

For the locations of the jumpers, refer to Figure 2 on the following page.

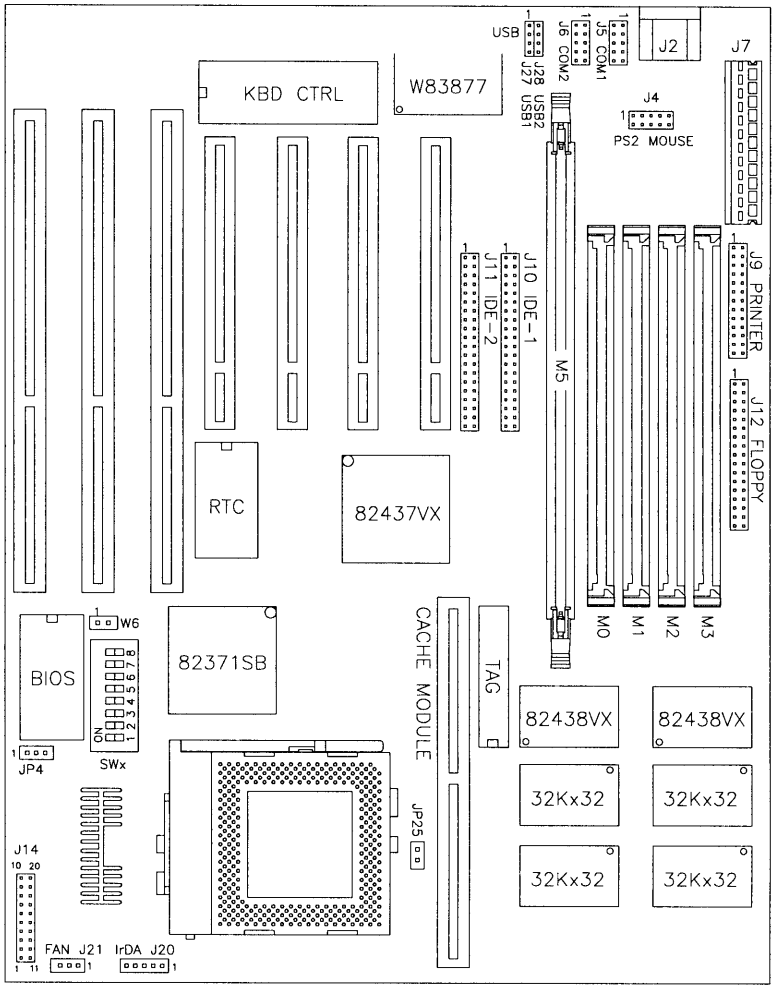


Figure 2: Jumper Location of the AI5TV

SW1: AT Bus Clock Select

Use this DIP-Switch to select the frequency of the AT bus clock (ATCLK). The ATCLK is derived from the PCI clock (PCLK) as PCLK/3 or PCLK/4 and the PCLK is derived from the CPU clock (CLK) as CLK/2.

For example, for a Pentium 100MHz system, the CLK would be 66MHz so the PCLK/2 equals to 33MHz. You would set SW1 as PCLK/4 where ATCLK would be 8.3MHz.

SW1	AT Clock
OFF	PCI Clock/3
ON	PCI Clock/4 (Default setting)

SW2: CPU Voltage Select

SW2	JP25	CPU Type	Vcore	V_{IO}
ON	ON	Intel Pentium (P54C) Cyrix 6x86, AMD K5	3.5V	3.5V
OFF	OFF	Intel Pentium MMX (P55C) Cyrix 6x86L, AMD K6	2.8V	2.8V

SW3, SW5, SW6, SW7, SW8: CPU Frequency Select

For Intel CPUs

SW3	SW5	SW6	SW7	SW8	Bus Clock	Multiplier	CPU
ON	OFF	OFF	ON	ON	50MHz	1.5x	P54C-75
ON	OFF	OFF	ON	OFF	60MHz	1.5x	P54C-90
ON	OFF	OFF	OFF	ON	66MHz	1.5x	P54C-100
ON	OFF	ON	ON	OFF	60MHz	2.0x	P54C-120
ON	OFF	ON	OFF	ON	66MHz	2.0x	P54C-133
ON	ON	ON	ON	OFF	60MHz	2.5x	P54C-150
ON	ON	ON	OFF	ON	66MHz	2.5x	P54C/P55C-166
ON	ON	OFF	OFF	ON	66MHz	3.0x	P54C/P55C- 200
ON	OFF	OFF	OFF	ON	66MHz	3.5x	P55C-233

For Cyrix 6x86, 6x86L CPUs

SW3	SW5	SW6	SW7	SW8	Bus Clock	Multiplier	CPU
ON	OFF	ON	ON	ON	50MHz	2x	6x86-P120+ (100MHz)
OFF	OFF	ON	ON	ON	55MHz	2x	6x86-P133+ (110MHz)
ON	OFF	ON	ON	OFF	60MHz	2x	6x86-P150+ (120MHz)
ON	OFF	ON	OFF	ON	66MHz	2x	6x86-P166+ (133MHz)

For AMD K5/K6 CPUs

SW3	SW5	SW6	SW7	SW8	Bus Clock	Multiplier	CPU
ON	OFF	OFF	ON	ON	50MHz	1.5	K5-PR75
ON	OFF	OFF	ON	OFF	60MHz	1.5	K5-PR90/PR120
ON	OFF	OFF	OFF	ON	66MHz	1.5	K5-PR100/PR133
ON	ON	ON	ON	OFF	60MHz	1.75	K5-PR150
ON	ON	ON	OFF	ON	66MHz	1.75	K5-PR166
ON	ON	ON	OFF	ON	66MHz	1.75	K6-PR2 166
ON	ON	OFF	OFF	ON	66MHz	3x	K6-PR2 200

W6:CMOS RAM Discharge

W6	Function
OFF	Normal operation
ON	Clear CMOS content

JP4: Flash ROM BIOS Voltage Select

Depending on the manufacturer and model, the programming voltage of the flash ROM can be 5V or 12V. This jumper should not be *altered* unless the flash BIOS is being replaced with a different type of flash ROM.

JP4	Flash ROM Type
1 - 2	12V Programming (Intel brand)
2 - 3	5V Programming (SST brand)

SW4: Default setting is OFF.

Chapter 4 Installation

This chapter describes the connectors and interface that the AI5TV provides for creating a working system. Refer to Figure 3 for the location of the connectors.

The following items are covered in this chapter:

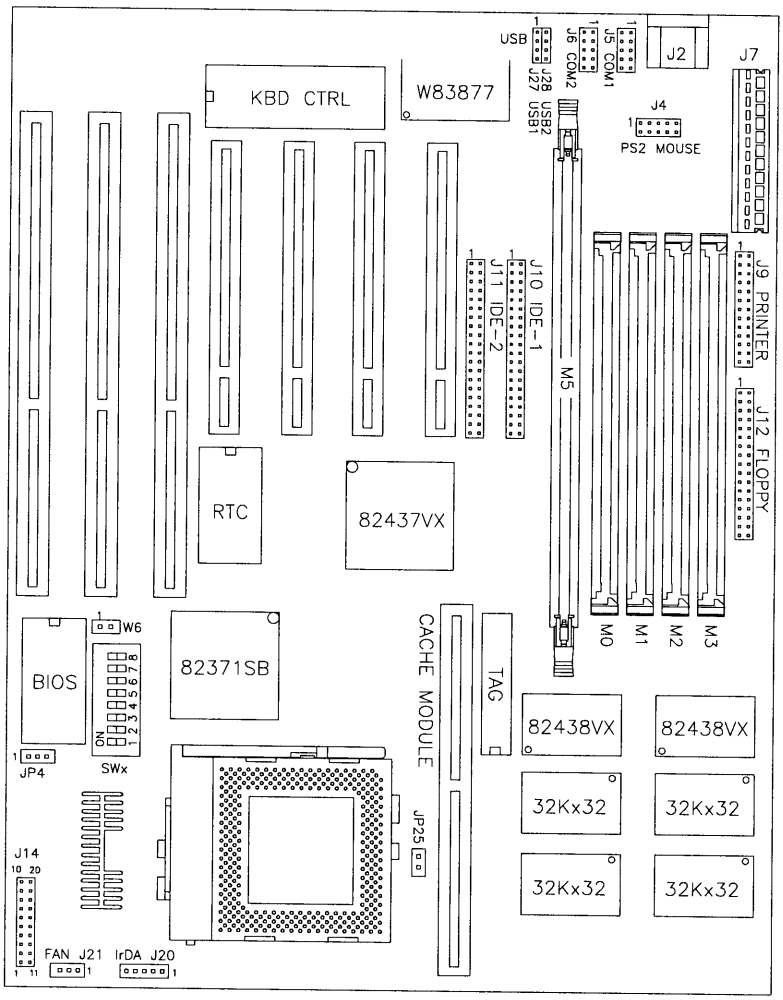
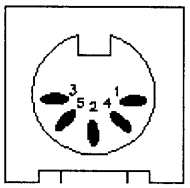


Figure 3: Connector Location of the AI5TV

J2: Keyboard/Mouse Connector

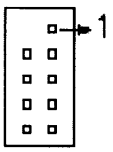
There are two configuration available on AI5TV, an AT keyboard connector or PS/2 keyboard and mouse connectors (J1, J3). The manufacturing default uses J2, an AT keyboard connector. The following table shows the pin out assignments of this connector.



Pin #	Signal Name
1	Keyboard Clock
2	Keyboard Data
3	N.C.
4	Ground
5	Vcc

J4: PS/2 Mouse Connector

The PS/2 mouse connector of the AI5TV motherboard is a 10-pin header for the optional PS/2 mouse external connector. The following table shows the pin out assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
N.C.	1		
N.C.	3	4	Mouse clock
N.C.	5	6	5V
Mouse data	7	8	N.C.
GND	9	10	N.C.

J7: Power Supply Connector

When using an AT compatible power supply, plug both of the power supply connectors into J7.

Make sure the power supply connectors are connected in the right orientation. The power supply connectors are connected in the right orientation if the black wires of each power cable are ADJACENT to each other. That is, black wires of each connector should be aligned in the center of the power supply connectors, J7, of the AI5TV.

The following table indicates the pin-out assignments of the power supply connectors.

J7 Pin #	Description	Wire Color
1	Power Good	Orange
2	+5V	Red
3	+12V	Yellow
4	-12V	Blue
5	Ground	Black
6	Ground	Black
7	Ground	Black
8	Ground	Black
9	-5V	White
10	+5V	Red
11	+5V	Red
12	+5V	Red

I/O Connector

The I/O connectors connect the AI5TV to the most common peripherals. To connect cables to these connectors, align carefully the Pin 1 of the cables to that of connectors. Refer to Figure 3 for the location and orientation of the connectors.

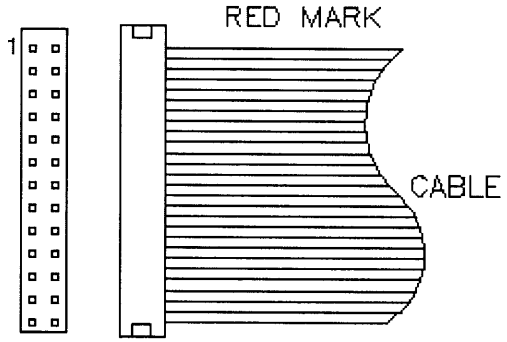
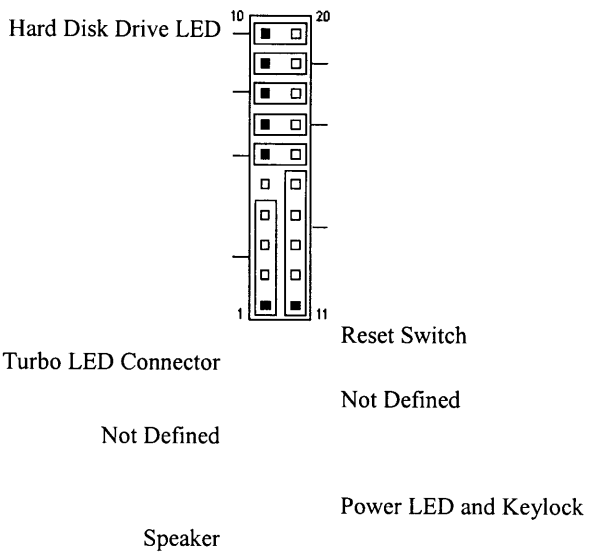


Figure 4: Orientation of the I/O Connector

J14: Front Bezel Connectors

The front bezel of the case has a control panel which provides light indication of the computer activities and switches to change the computer status.

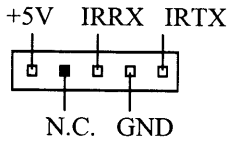


J21: FAN

This J21 is an easy access connector for CPU fan power. The fan must be a 12V fan.

J20: Infrared Connector

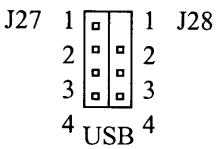
This connector is used for an IrDA connector.



J20 Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J27, J28: USB Connectors

J27 and J28 are pin headers for the optional USB external connector. The following table shows the pin out assignments of these connectors.



J27 (USB1) Pin #	J28 (USB2) Pin #	Signal Name
1	1	Vcc
2	2	USB-
3	3	USB+
4	4	Ground

Chapter 5 BIOS

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer the Award BIOS is immediately activated. Pressing the <Del> key immediately will allow you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST(Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system off and back on again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. Another section at the bottom of the Main Menu just below the control keys section displays information on the currently highlighted item in the list.

NOTE: After making and saving system changes with Setup, you find that your computer can not boot, the Award BIOS supports an override to the CMOS settings that resets your system to its default.

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configurations stored in the CMOS memory were lost or damaged.