PENTIUM™ PCI MAIN BOARD

PT-730A

USER'S MANUAL

BEFORE INSTALLING THIS 586 MAIN BOARD PLEASE READ THIS MANUAL COMPLETELY AND RETAIN IT FOR FUTURE REFERENCE.

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1. INTRODUCTION

1.1 Overview

- PT-730A offers a 64-bit programming architecture compatible with the software base of the 486, 586 microprocessor. It is a reliable motherboard using a UMC chipset and a multi-layer printed circuit board. The chipset consists of UM8891AF (Host Bridge & Cache Memory Controller), UM8892AF (Write Buffer Data Path Controller) and UM8886AF (ISA Bridge & System I/O Controller) which provides the most cost effective and high performance solution for a PCI PENTIUM computer system.

- A block of 128K memory of the system DRAM is used for system and video shadow RAM to increase the system performance. The video shadow RAM consists of four 16K pages which can be enabled respectively.

- PT-730A is a PCI Local Bus motherboard. The three PCI Local Bus slots fully comply with the PCI (Peripheral Component Interconnect) Local Bus Specification Rev. 2.0. The speed of I/O peripherals can be dramatically increased by connecting PCI compatible interface cards to the PCI Local Bus slots on the PT-730A. We are the member of PCI SIG (Special Interest Group).

- PT-730A is a green design mother-board which means when there is no system activity for a specific period of time (this period is software programmable), the PT-730A will slow down its original working frequency to zero. This will help to save the power consumption, reducing energy related pollution and protecting our environment. PT-730A is also equipped with a unique AUX Green connector which can be connected up to an external product, called an 'ECO-PAD' which can control the on/off switching of external power devices such as printers, monitors and scanners, through the motherboard BIOS. If you do not use an ECO-PAD then the same connector can also be used to control the vertical and horizontal sync of your monitor when connected to a range of "PT-xxxx" VGA cards. For further information on the ECO-PAD or other "PT" products please contact your dealer or sales representative.

"This is an **ENERGY STAR**^{TM} compliant product."

The Environmental Protection Agency **ENERGY STAR**^{TM} program defines that as an Ally of this program the specified manufacturer must produce systems, or system components which enable a computer system to operate and draw 30 watts or less of power in idle mode. Although the EPA do not endorse any particular product or service, the program is designed to offer a cooperative effort between the EPA and the component manufacturer (Ally) to provide energy saving products and education to customers."

"It runs with Netware"

The PT-730A was authorized by Novell to use the Novell Yes, It runs with Netware certification mark.

"FCC Approval"

The PT-730A motherboard has been approved for FCC Class B when properly installed in a barebone configuration using the following case/power supply:

Brand	Model	FCC ID
Procase	PC-109 SM	JPJPINE429G109
Procase	PC-609 T/M	JPJPINE429G609
Procase	PC-709 T/M	JPJPINE429G709

FCC Notice:
Information to the User
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.   Should you experience interference to radio or television reception then the user is encouraged to try to correct this interference by one or more of the following measures:
- Re-locate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help and for additional suggestions.

The user may find the following booklet prepared by the Federal Communications Commission helpful:
"How to identify and Resolve Radio-TV Interference Problems." This booklet is available from the US Government Printing Office, Washington, DC20402, Stock No. 004-000-00345-4.

FCC Warning
The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Note: **In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables and power cord must be used.**

1.2 Checklist

Please check your PT-730A package to ensure that it contains the following items :

- PT-730A Main Board
- PT-730A User's Manual
- PT-730A Enhanced IDE Driver Diskette
- 40-way flat cable 2 pieces

If any of these items are missing or damaged, please contact your local dealer or sales representative for assistance.

1.3 Green PC Power Management

The Green PC mode is a state that minimizes power consumption. There are three different Green PC modes :

1) Doze mode. This mode is available for all kinds of CPU. The clock of the CPU will slow down to 8 MHz.
2) Standby mode. The clock of the CPU will slow down to the pre-set frequency.
3) Inactive mode / Sleep Mode. The PT-730A can stop the CPU clock under this mode.

The PT-730A extends the Green PC feature to a Green AUX connector (JP35). Through this connector, the user can connect the PT-730A with an ECO-PAD or a range of "PT-xxxx" VGA cards and IDE I/O cards which have the unique Green Aux connector.   This enables :

- ECO-PAD - Turn off video monitor,
- ECO-PAD - Turn off printer (or other peripheral) power.
- PT-xxxx VGA CARD - Turn off the vertical & horizontal sync of the monitor.

 (Note : The hardware function on "PT-xxxx" VGA cards is more efficient than a green software driver (screen saver) as it works with all types of software applications such as DOS or Windows. It is completely independent of software being used at the time).

The PT-730A will be placed into Green PC mode as a result of one of the following events :

- Suspend switch (JP6) is pressed.
- Expiration of the internal Green PC Timer. The Green PC Timer is software programmable which can configured in the "Power Management Setup" option of the BIOS CMOS setup. The power management feature will be *enabled* as default, however the timing may differ due to production control. It is recommended that you re-adjust these timings according to your personal requirements/set-up.

Through system activity monitoring and management, the PT-730A will not go into Green PC mode if any of the following activity is detected:

- PCI Master 0 activity
- PCI Master 1 activity
- PCI Master 2 activity
- PCI slave activity
- LPT port activity
- COM port activity
- ISA master & DMA activity
- IDE activity
- Floppy activity
- VGA activity
- Keyboard activity

For further details on the ECO PAD, or 'PTxxxx' VGA and I/O cards please contact your local dealer or sales representative for assistance.

2. SPECIFICATIONS

2.1 PT-730A System Board Specifications

- IBM AT compatible.
- Applied High performance CMOS technology.
- Supports up to 64MB memory on board.
- Mix 256K, 1M, and 4M SIMM (8 bit/32 bit) Module DRAM memory
- 256K, 512K, 1024K cache memory size selectable.
- Fast CPU reset and Fastgate A20 logic.
- Speed switching with hardware and software selection.
- Board size 220 mm x 260 mm.
- Four 16-bit ISA slots; three PCI slots (Master Mode).
- Clock chip design makes CPU speed changing easier.
- I/O slot signal protector on: IRQ9, DRQ2, 0WS#.
- Green features to slow down / stop the CPU clock & turn off VGA display signals.
- Supports both 3.3V & Mixed Mode cache RAM.
- Supports ECO-PAD for turning off external power devices in green modes.
- On-board enhanced IDE controller supports up to 4 HDD.
- On-board CPU cooling fan power socket can be switched off automatically in green modes.
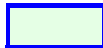
2.2 Jumpers and Connectors

Jumpers / Connector	Description
PS1	Power Supply Connector
PS2	3.3V Power Supply Connector
KB1	Keyboard Connector
CN1	Battery Connector
CN2	Reset Switch
CN3	Speaker Connector
CN4	Turbo Switch
CN5	Turbo LED Connector
CN6	HDD LED
CN7	Power LED & Key-lock Connector
JP4	Clock Chip Speed Select
JP5	Flash ROM Type Select
JP6	Power Saving Switch
JP7	CPU Type Select
JP8	CPU Bus Frequency Select
JP9,JP10,JP11,JP12	Cache Size Select
JP13,JP14	Internal / External KB Controller Select
JP15	CPU Fan Control Select
JP16	ECO-PAD / PT-VGA Connector
JP17	CPU Fan Power Connector
JP18	Power Good Select
JP19,JP20	3.3V / Mixed Mode Cache RAM Select

To assist you in locating the necessary jumpers in order to configure your system, the following graphical guide has been added for jumper location.

SIMM

PCI SLOTS

ISA

CPU
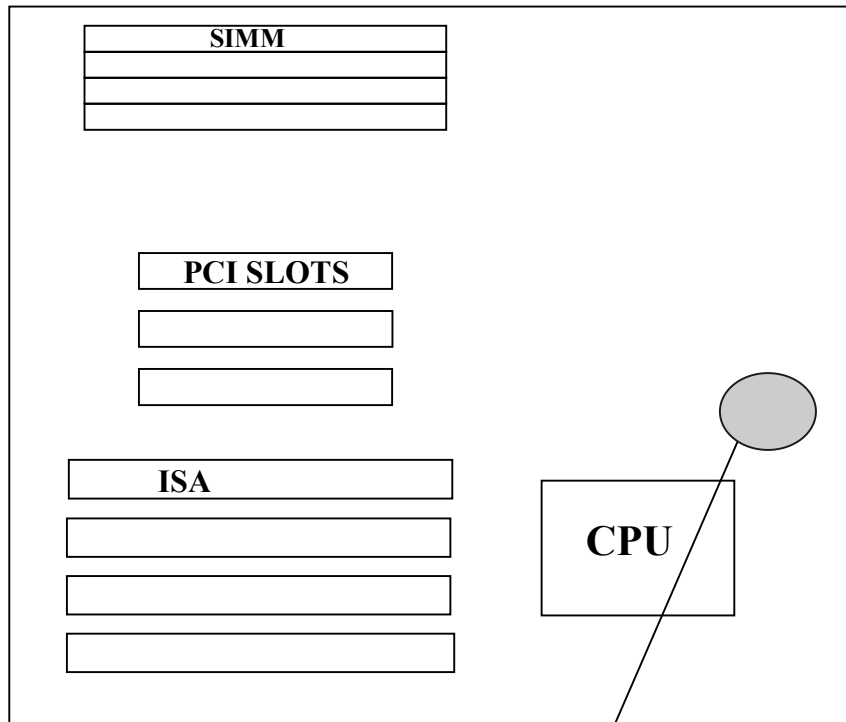
JUMPER / CONNECTOR POSITION

PS1:   Power Supply Connector Pin Assignment

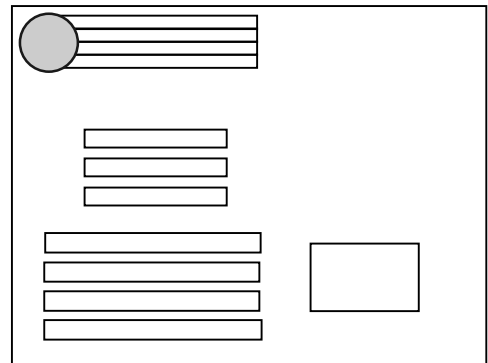| 1	Power Good
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground
7	Ground
8	Ground
9	-5V
10	+5V
11	+5V
12	+5V

This jumper is for the system case main power supply connector. This connector can only be attached in one specific way to avoid any crossed signals/shorts. This also contains the 'Power Good' signal. This is a signal from your power supply which recognizes that the system board is stable enough to release its power to. Should your power supply not have a 'Power Good' signal, then you should choose the internal 'On-board Power Good' on this motherboard as per jumper JP18.

PS2 :   3.3V Power Supply Connector Pine Assignment

1	+ 3.3V
2	+ 3.3 V
3	+ 3.3 V
4	Ground
5	Ground
6	Ground
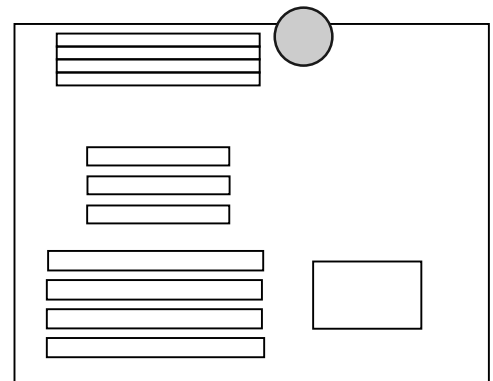
This jumper is for the system case main power supply connector which has 3.3V output. This connector can only be attached in one specific way to avoid any crossed signals/shorts.

CN1:   Battery Connector Pin Assignment

2-3	Normal on-board battery
3-4	Reset CMOS setting
For external battery: pin 1 is "+" ; pin 4 is "-"	
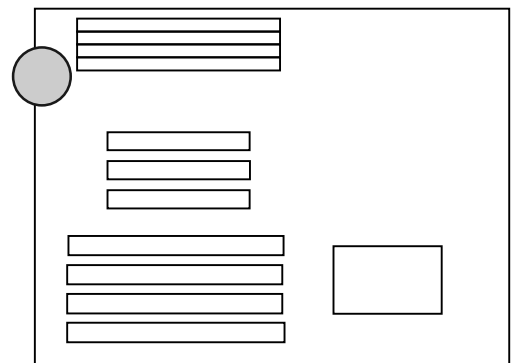
Default is let this jumper open because the PT-730A has a Dallas RTC chip which has a battery built-in. Should you set the CMOS incorrectly and wish to reset this, then change jumpers as

shown. Should you wish to use an external battery, pull off the jumper and ensure that the "+" and "-" of the external battery pack cable are correct as shown.

CN2:   Reset Switch

OPEN	Normal
SHORT	Reset

For the system reset switch on your system case. Connect the cable here.
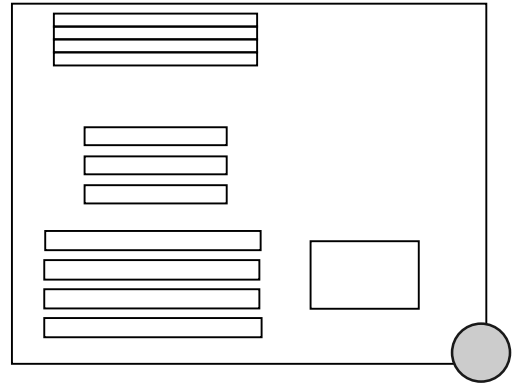
CN3: Speaker Connector

1	Speaker data
2	NC
3	Ground
4	+ 5V

Connect the speaker cable from your system case here.
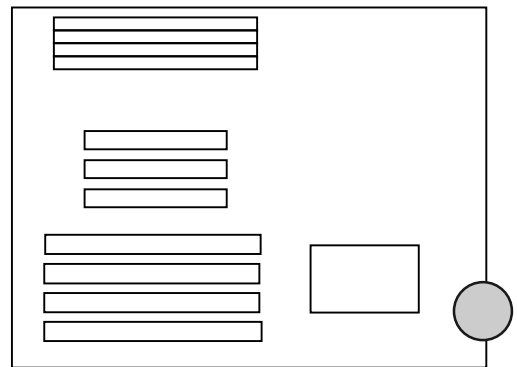
CN4: Turbo Switch

OPEN	Turbo speed
CLOSE	Normal speed (soft-key disabled)

Connect the turbo switch cable from your system case here.
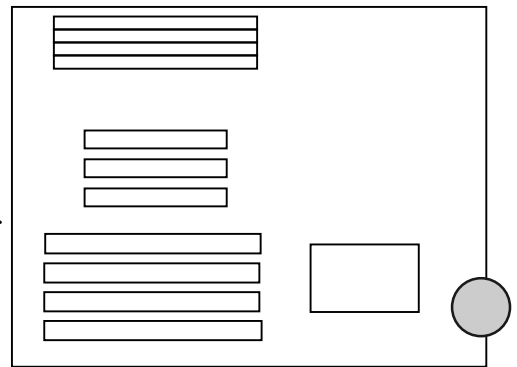
CN5: Turbo LED Connector

1	LED anode
2	LED cathode

Connect the TURBO LED from your case to here.
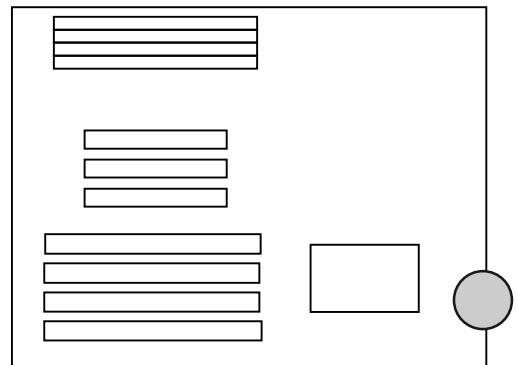
CN6: HDD LED Connector

1	LED anode
2	LED cathode

For the HDD LED of your system case, connect cable here.
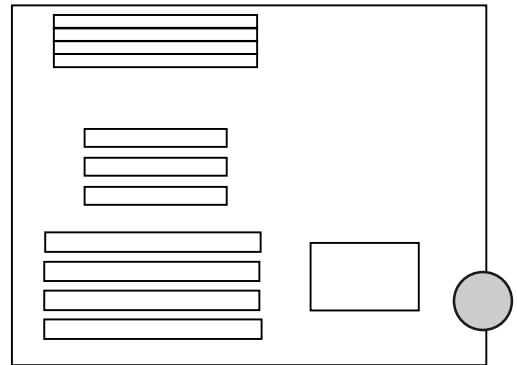
CN7: Power LED & Key-lock Connector

1	+ 5V
2	NC
3	Ground
4	Key-lock
5	Ground

For the power LED and Key-lock of your system case, connect cables here.
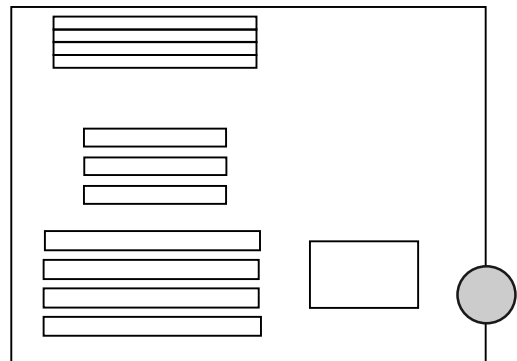
JP4, JP8:   Clock Chip Speed Select

CPU Speed	Clock	JP14 Pin 1-2	JP14 Pin 3-4	JP14 Pin 5-6	JP8
75 MHz	50 MHz	ON	OFF	OFF	OFF
90 MHz	60 MHz	OFF	ON	OFF	OFF
100 MHz	66 MHz	ON	OFF	ON	OFF
120 MHz	60 MHz	OFF	ON	OFF	ON

This selects the speed of the CPU signal to the clock chip.
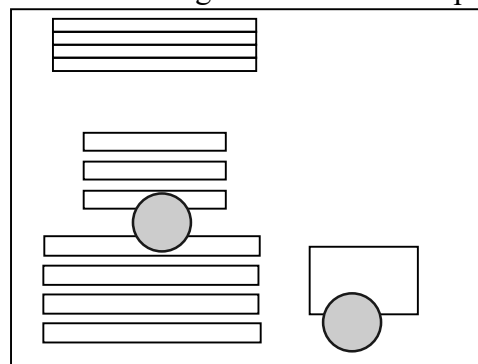
JP5 : Flash ROM Type Select

1-2	5V Flash ROM
2-3	12V Flash ROM
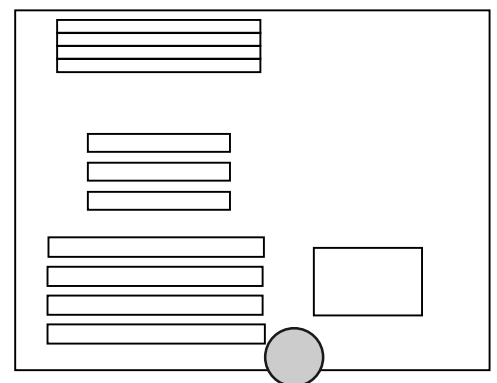
This motherboard can use a FLASH ROM in order to change the system BIOS through software. This allows you to constantly update your system BIOS as changes are made. Should you wish to use this feature then you must set this jumper according to the voltage of that FLASH ROM. Default is no connection because the PT-730A uses only a EPROM as its standard feature. When using FLASH ROM a Flash Memory Writer Utility software driver is required. For details on this driver please contact your dealer or sales representative.

JP6: Power Saving Switch

Press one time to go in suspend mode
Press another time to go back normal mode

Some system cases will also have a cable for a switch on the case front which when pressed will automatically put the system in to / and out of 'suspend' mode. Connect that cable here .
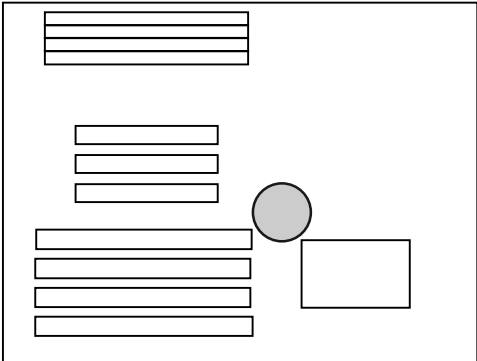
JP7: CPU Type Select

OPEN	Write Back CPU
SHORT	Write Through CPU

This motherboard has been designed to work with both Write Back & Write through type of CPU. Set this according to the type of CPU used
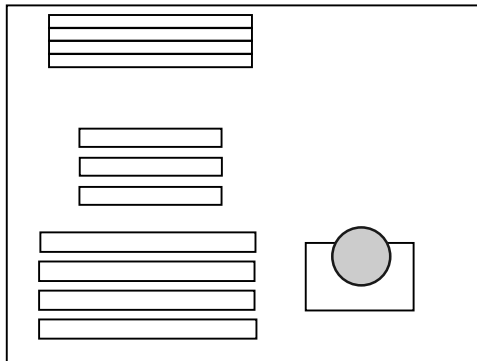
JP9,JP10,JP11,JP12 : Cache Size Select

	JP9	JP10	JP11	JP12	SRAM
256K	OFF	OFF	OFF	OFF	8K8 X 8
512K	ON	OFF	ON	OFF	64K8 X 4
1024K	ON	ON	ON	ON	128K8 X 8

This selects the size and type of cache ram on the motherboard.
This motherboard can work with three types of cache ram which
allows for extra flexibility should you wish to upgrade. The jumpers will be set accordingly during production.
- U18,U19,U20,U21,U22,U23,U24,U25 is the DATA RAM.
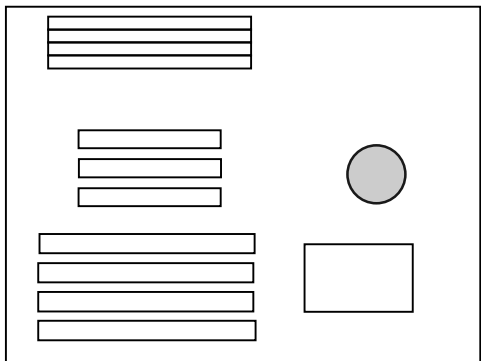
- U17 is the TAG RAM.

JP13,JP14:   Internal External KB Controller Select
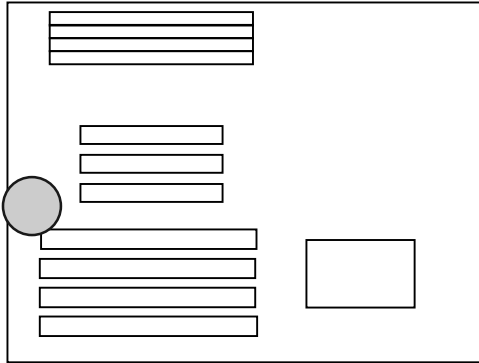
The UMC chipset used on this motherboard has an internal keyboard controller (KB BIOS).   The motherboard design also allows for an external KB BIOS chip for extra flexibility should the parameters of the BIOS change.   In order for the system to recognize the keyboard signal you must first tell it which KB BIOS you are using. Default is internal.

	JP13	JP14
Internal KBC	OPEN	OPEN
External KBC	SHORT	SHORT

JP15: CPU Fan Control Select

1-2	CPU fan control by green mode
2-3	CPU fan always on

This motherboard has been equipped with an on-board connector for the CPU cooling fan. The advantage of this feature is that as well as the CPU, the cooling fan itself can be switch off according to the power management settings in the Green system BIOS.   Here there are options for control by BIOS or cooling fan permanently on.
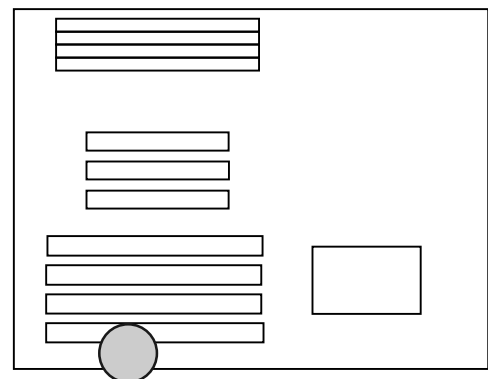
JP16: ECO-PAD / GREEN VGA & IDE Card Connector

1	+ 5V	For ECO PAD
2	Ground	For ECO PAD/VGA/IDE
3	Control signal	ForECO PAD/VGA/IDE

This connector can add further power saving Green features to your system when used in conjunction with either an ECO-PAD or 'PT-xxxx' Green VGA Card / Green IDE I/O card with hardware connection. For further details refer to the 'Green PC Power Management' section of this manual.
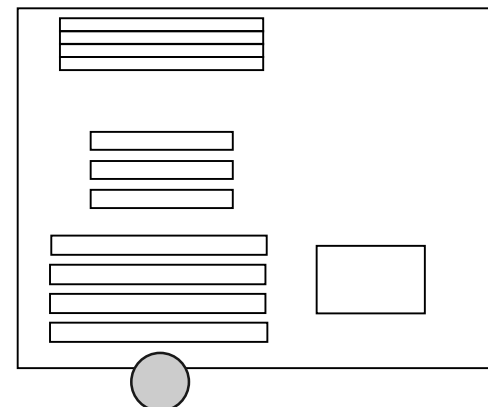
JP17: CPU Fan Power Connector Pin Assignment

1	+12V
2	Ground
3	Ground
12	+5V

This jumper is for the CPU cooling fan power connection. This connector can only be attached in one specific way to avoid any crossed signals/shorts.
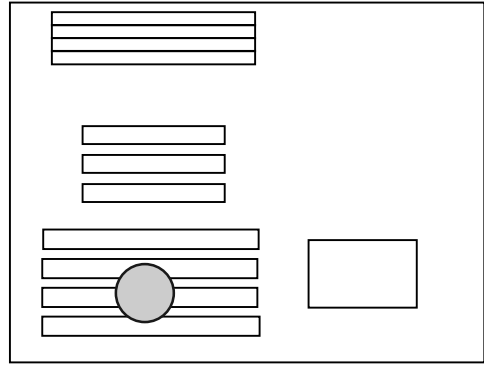
JP18: Power Good Select

1-2	Internal Power good
2-3	External power good

Most power supplies produce a 'Power Good' signal which recognizes that the system board is stable enough to release the power to, however this motherboard also includes an on-board Power Good circuit for additional safety.
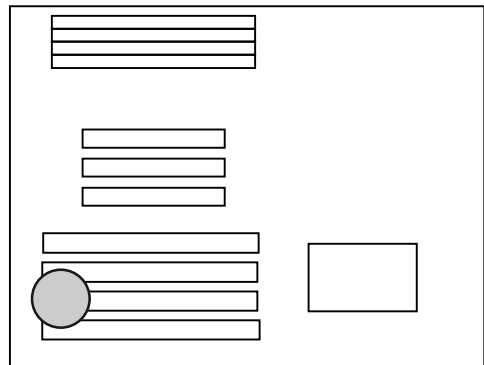
JP19,JP20:   3.3V / Mixed Mode Cache RAM Select

	JP19	JP20
3.3V Cache RAM	1-2,3-4,5-6	OFF
Mixed Mode Cache RAM	OFF	1-2,3-4,5-6
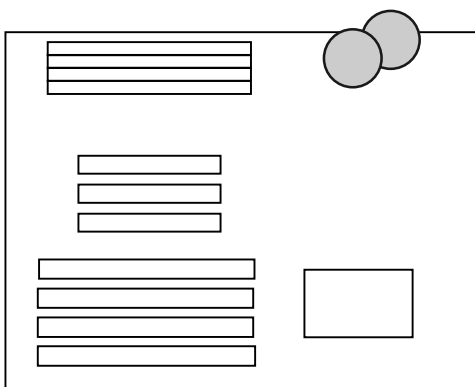
This motherboard can support Mixed Mode cache RAM only. The jumpers will be set accordingly during production

*** **This board cannot support 5V cache RAM. If you use 5V cache RAM, may cause damage to the CPU.**

2.3 SIMM MEMORY Configuration

This motherboard supports the 72-Pin SIMM memory.

72-Pin
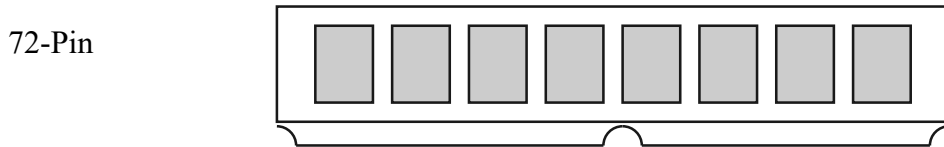
This type of SIMM is a 32-bit module. (sometimes referred to as "..x32" or "..x36"). There are various types of this module available ranging from 1MB capacity up to 32MB. However it should be noted that different types can be split up into two groups - namely "single bank" and "dual bank". The table below shows the difference:

SIMM TYPE	CAS Signals / bank For 1 Pc SIMM	TOTAL MEMORY For 1 Pc SIMM
256k x 32 (Non-Parity)	one - single bank	1 MB
256k x 36 (Parity)	one - single bank	1 MB
512k x 32 (Non-Parity)	two - dual bank	2 MB
512k x 36 (Parity)	two - dual bank	2 MB
1M x 32 (Non-Parity)	one - single bank	4 MB
1M x 36 (Parity)	one - single bank	4 MB
2Mx 32 (Non-Parity)	two - dual bank	8 MB
2M x 36 (Parity)	two - dual bank	8 MB
4M x 32 (Non-Parity)	one - single bank	16 MB
4M x 36 (Parity)	one - single bank	16 MB
8M x 32 (Non-Parity)	two - dual bank	32 MB
8M x 36 (Parity)	two - dual bank	32 MB

Since this motherboard supports the 586/Pentium processor, which has 64-bit architecture, you will require a minimum of two pieces of SIMM (equal to 64-bit) in order to boot the system.

As such the four SIMM sockets of this motherboard can be looked upon as two separate 64-bit banks. Although this motherboard can support both single-bank and double bank SIMM, it should be noted that you cannot mix the two types within a 64-bit bank. Below is a diagram showing the correct and incorrect ways of using single and dual banked SIMMs.

64 bit bank — 1M x 32/36 (Single Bank)
1M x 32/36 (Single Bank)
64 bit bank — 2M x 32/36 (Dual Bank)
2M x 32/36 (Dual Bank)

Correct

64 bit bank —	1M x 32/36 (Single Bank)
	2M x 32/36 (Dual Bank)
64 bit bank —	1M x 32/36 (Single Bank)
	2M x 32/36 (Dual Bank)

Incorrect
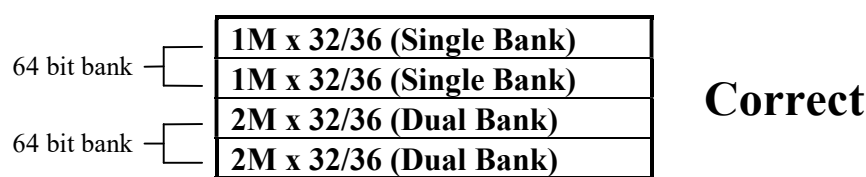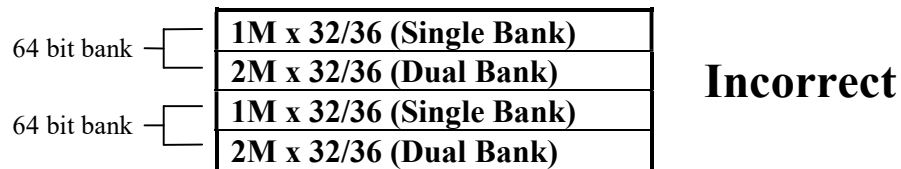
As The UMC chipset of this motherboard supports up to 8 CAS signals. Each CAS signal is equal to one 32-bit bank. Therefore it is possible to use 4 pcs. of dual-banked SIMM allowing up to 128MB on board memory.

3. AWARD BIOS SETUP

3.1 Entering Setup

To enter Setup, press the <Del> key immediately at system power on or at system restart. The Main Menu allows you to select from nine setup functions and two exit options. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu:

3.2 The Main Menu

ROM PCI / ISA BIOS (2A5X7PCH)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT SETUP	EXIT WITHOUT SAVING
PCI/GREEN FUNCTION SETUP	
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	

Esc : Quit   ↑↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift) F2 : Change Color

Time, Date, Hard Disk Type...

3.3 Standard CMOS Setup

This setup page includes all the items in a standard compatible BIOS. The items are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
                    ROM PCI / ISA BIOS  (2A5X7PCH)
                        STANDARD CMOS SETUP
                        AWARD SOFTWARE,  INC.
```

```
Date  (mm:dd:yy)     :  Tue, May 16 1995
Time  (hh:mm:ss)     :  17 : 54 : 42

HARD DISKS            TYPE    SIZE      CYLS HEAD PRECOMP LANDZ SECTOR MODE

Primary Master     :  USER     425     989    15    65535    988     56 NORMAL
Primary Slave      :  None       0       0     0        0      0      0 ------------
Secondary Master   :  None       0       0     0        0      0      0 ------------
Secondary Slave    :  None       0       0     0        0      0      0 ------------

Drive  A :  1.44M,  3.5 in.
Drive  B :  None                            Base  Memory :    640K
                                        Extended Memory :   7168K
Video    : EGA/VGA                         Other Memory :    384K
Halt On  : All Errors
                                           Total Memory :   8192K

Esc  : Quit              ↑↓ → ←  : Select Item    PU/PD/+/- :  Modify
F1   : Help             (Shift) F2 : Change Color
```

Date

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

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Hard Drive type

The categories identify the types of hard disk drive C:, D:, E:, and F: that have been installed in the computer. There are 46 predefined types(Type 1 to Type 46) and a user definable type (Type User).

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that your drive specifications must match with the drive table; otherwise the hard disk will not work properly. If your hard disk drive type is not matched or listed, please use Type User to define your own drive type manually.

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

CYLS.	number of cylinders in hard disk
HEADS	number of heads
PRECOMP	write precom
LANDZON	the cylinder location where the heads park when the system is shut down
SECTORS	number of sectors per track. MFM drives have 17 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drives may have even more sectors per track.
MODE	Normal: for hard disks smaller than 528MB LBA:　　for hard disks larger than 528MB Large: for hard disks that can only use with MS-DOS and 　　　　have a capacity larger than 528MB that do not use 　　　　LBA.

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

Note SCSI hard disks use device drivers that are support by current PC BIOS. Hence, don't enter their specifications here. For SCSI hard disk installation, please refer to the instructions that come with the SCSI drive.

Floppy Drive A type/Drive B type

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

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

Video

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

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

Error halt

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

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

Memory

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

Base Memory

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

Extended Memory

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

Expanded Memory

Expanded Memory is memory defined by the Lotus/Intel/Microsoft (LIM) standard as EMS. Many standard DOS applications can not utilize memory above 640K, the Expanded Memory Specification (EMS) swaps memory which is not utilized by DOS with a section, or frame, so these applications can access all of the system memory. Memory can be swapped by EMS is usually 64K within 1MB or memory above 1MB, depending on the chipset design.

Expanded memory device driver is required to use memory as Expanded Memory.

Other Memory

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

3.4 BIOS Features Setup

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

```
                    ROM PCI / ISA BIOS  (2A5X7PCH)
                         BIOS FEATURES SETUP
                        AWARD SOFTWARE,  INC.
```

Virus Warning	: Disabled		Video BIOS shadow	: Enabled
CPU Internal Cache	: Enabled		C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled		CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled		D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A,C		D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled		D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled		DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On			
Boot Up System Speed	: High			
IDE HDD Block Mode	: Disabled			
IDE 32-bit Transfer Rate	: Disabled			
Gate A20 Option	: Fast			
Memory Parity Check	: Enabled			
Typematic Rate Setting	: Disabled			
Typematic Delay (Chars/sec)	: 6			
Typematic Delay (Msec)	: 250		Esc : Quit ↑↓ →← : Select Item	
Security Option	: Setup		F1 : Help PU/PD/+/- : Modify	
			F5 : Old Value (Shift) F2 : Color	
IDE Second Channel Control	: Enabled		F6 : Load BIOS Defaults	
			F7 : load Setup Defaults	

Virus Warning

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

```
                    ! WARNING !
            Disk boot sector is to be modified
      Type "Y" to accept write or "N" to abort write
                  Award Software, Inc.
```

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is disable.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive computer searches first for the disk operating system (i.e., DOS). Default value is A,C.

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

Swap Floppy Drive

Enabling this option will make Drive A as Drive B and Drive B as Drive A under DOS.

Boot Up Floppy Seek

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

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

Boot Up NumLock Status

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run at immediately after power up.

High	Set the speed to high
Low	Set the speed to low

IDE HDD Block Mode

Enabled	Enable IDE HDD Block Mode. The BIOS will detect the block size of the HDD and send block command automatically
Disabled	Disable IDE HDD Block Mode

Gate A20 Option

Normal	The A20 signal is controlled by keyboard controller or chipset hardware
Fast	The A20 signal is controlled by Port 92 or chipset specific method

Memory Parity Check

Enabled	Normal memory parity check. System DRAM is no parity bit then the system will display "RAM parity error"
Disabled	Ignore memory parity check

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When holding down a key, the time between the first and second character displayed.

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

Security Option

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

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

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

IDE Second Channel Control

This option enables or disables secondary hard disk drives E: and F:.

Video BIOS Shadow

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

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/E8000 - EFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 16K byte.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

3.5 Chipset Features Setup

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

```
                    ROM PCI / ISA BIOS  (2A5X7PCH)
                       CHIPSET FEATURES SETUP
                       AWARD SOFTWARE,  INC.
┌─────────────────────────────────────────┬──────────────────────────────────────────┐
│  Auto  Configuration      : Enabled      │  PCI Posted Memory Write    : Enabled    │
│                                          │  Host Clock / PCI Clock     : 1 : 1/2    │
│  DRAM Read Wait States    : 1  WS        │  Preempt PCI Master Option  : Enabled    │
│  DRAM Write Wait States   : 1  WS        │  IBC DEVEL# Decoding        : Slow       │
│  DRAM RAS# Precharge Time  : 3  clocks   │                                          │
│  DRAM RAS# low to CAS# low : 3  clocks   │                                          │
│  DRAM Page Mode Option    : Enabled      │                                          │
│  L2 Cache Update Scheme   : Wr-Back      │                                          │
│  Tag Option               : 7+1 Bit      │                                          │
│  Cache Read Wait States   : 0  WS        │                                          │
│  Cache Write Wait States  : 0  WS        │                                          │
│  Cache Ta Hit Wait States : 0  WS        │                                          │
│  Video BIOS Cacheable     : Disabled     │                                          │
│  Keyboard Controller Clock : PCICLKI/3   ├──────────────────────────────────────────┤
│  ISA Bus Clock Option     : PCICLKI/3    │                                          │
│  Keyboard Emulation       : Disabled     │  Esc  : Quit      ↑↓ → ← : Select Item   │
│  Memory Hole Below 16 B   : NONE         │  F1   : Help       PU/PD/+/- : Modify    │
│  CPU Pipeline Function    : Disabled     │  F5   : Old Value  (Shift) F2 : Color    │
│  CPU To PCI Write Buffer  : Enabled      │  F6   : Load BIOS Defaults               │
│  PCI Bus Park Option      : Enabled      │  F7   : load Setup Defaults              │
│                                          │                                          │
└─────────────────────────────────────────┴──────────────────────────────────────────┘
```

Auto Configuration

Enable this option the BIOS will automatically setup the "DRAM Read Wait States," "DRAM Write Wait States," " DRAM RAS# Precharge Time," "DRAM RAS# low to CAS# low," "Cache Read Wait States," "Cache Write Wait States," "Cache Tag Hit Wait States," "Keyboard Controller Clock," "ISA Bus Clock Option," and "Host Clock/ PCI Clock."

Disable this option will allow user to setup each item in the Chipset Feature Setup.

DRAM Read Wait States

This option specifies the number of wait states when CPU reads the memory.

DRAM Write Wait States

This option specifies the number of wait states when CPU writes the memory.

DRAM RAS# Precharge Time

This option specifies the number of CPU clocks used for memory RAS# signal percharge time.

DRAM RAS# low to CAS# low

This option specifies the delay (CPU clocks) for memory RAS# asserted to memory CAS# asserted.

DRAM Page Mode Option

This option enables or disables Page Mode function of the DRAM.

L2 Cache Update Scheme

This option specifies the L2 cache update scheme as Write Through or Write Back

Tag Option

This option programs the 8-bit tag SRAM to contain 7-bit or 8-bit tag.

Cache Read Wait States

This option specifies the number of wait states when CPU reads cache memory.

Cache Write Wait States

This option specifies the number of wait states when CPU writes cache memory.

Cache Tag Hit Wait States

This option specifies the number of wait states when there is a tag hit.

Video BIOS Cacheable

Enable this option will copy video display card BIOS to cache to improve performance.

Keyboard Controller Clock

This option specifies keyboard controller clock speed as a fraction of PCI clock speed.

ISA Bus Clock Option

This option specifies ISA clock speed as a fraction of PCI clock speed.

Keyboard Emulation

Enable this option will emulate Keyboard's Gate A20 Function and keyboard's fast Reset.

Memory Hole Below 16Mb

Set the size of memory hole below 16MB of the main memory.

CPU Pipeline Function

This option enables or disables CPU pipeline function.

CPU To PCI Write Buffer

This option enables or disables the write buffer function between CPU and PCI devices.

PCI Bus Park Option

This option enables or disables the PCI Bus Park function.

PCI Posted Memory Write

This option enables or disables PCI Post Write buffer.

HOST Clock / PCI Clock

This option sets the ratio of Host clock to PCI clock.

Preempt PCI Master Option

This option specify whether the PCI Master to be preemptive or not.

IBC DEVEL# Decoding

This option sets IBC(ISA Bridge Controller) DEVEL# decoding to be slow or fast.

3.6 Power Management Setup

```
                    ROM PCI / ISA BIOS  (2A5X7PCH)
                       POWER MANAGEMENT SETUP
                       AWARD SOFTWARE,  INC.
```

Power Management	: Disable	* Monitor Event In Full On Mode	
		PCI Master2 Check	: Disabled
PM Control By APM	: Enabled	PCI Master1 Check	: Disabled
Video Off Method	: DPMS Support	PCI Master0 Check	: Disabled
HDD Standby Timer	: Disabled	VESA Slave Access Check	: Disabled
Doze Timer Select	: 512 Min	LPT Access Check	: Enabled
Standby Timer Select	: 512 Min	COM Access Check	: Enabled
Inactive Timer Select	: 512 Min	ISA Master & DMA Check	: Enabled
		IDE Access Check	: Enabled
Mode Control	: CPU Speed Display	Floppy Access Check	: Enabled
Doze Mode	: 1 / 4 HCLK Turn On	VGA Access Check	: Disabled
Standby Mode	: 1 / 8 HCLK Turn Off	I/O Region Access Check	: Disabled
Inactive Mode	: Stop CLK		

```
ESC    : Quit            ↑↓ → ← : Select Item
F1     : Help                 PU/PD/+/- : Modify
F5     : Old Values        (Shift) F2   : Color
F6     : Load BIOS Defaults
F7     : Load Setup Defaults
```

Power Management

This category determines how much power consumption for system after selecting below items. Default value is Disable.

User Defined	All the power down time-out values are selected by user.
Max power Saving	Auto setting power down time-out value to maximum power consumption.
Min Power Saving	Auto setting power down time-out value to save minimum.
Disable	Disable whole system power management function.

PM Control By APM

This option enables or disables the Microsoft Advanced Power Management function.

Video Off Method

DPMS Support	support DPMS power saving
Blank Screen	blank the screen at power saving mode
V/H SYNC+Blank	blank the screen and stop the CRT scanning at power saving mode

HDD Standby Timer

Select time-out value 1-15 minutes for IDE with disk auto standby. This function depends on disk drive, some older mode disk drives don't support auto standby function. System BIOS set this function before booting if HDD supported.

Doze Timer Select

Set the length of time of PT-730A inactivity that must be expired before PT-730A is placed in Doze mode.

Standby Timer Select

Set the length of time of PT-730A inactivity that must be expired before PT-730A is placed in Standby mode.

Inactive Timer Select

Set the length of time of PT-730A inactivity that must be expired before PT-730A is placed in Inactive mode.

Mode Control

Set the CPU speed at power saving modes Doze Mode, Standby Mode, and Inactive Mode and set whether the Display should be on or off at these modes.

Doze Mode

Set Doze Mode speed and set the status of the Display.

Standby Mode

Set Standby Mode speed and set the status of the Display.

Inactive Mode

Set the frequency of Inactive Mode and set the status of the Display.

Monitor Event In Full On Mode

These options specify whether PT-730A should monitor which device events in Full on mode for power management.

3.7 PCI/Green Function Setup

```
                    ROM PCI / ISA BIOS  (2A5X7PCH)
                      PCI/GREEN FUNCTION SETUP
                       AWARD SOFTWARE,  INC.

┌─────────────────────────────────────┬──────────────────────────────────────┐
│                                      │                                      │
│  Slot 1 Using INT#      : AUTO       │  * WakeUp Event In Inactive Mode     │
│  Slot 2 Using INT#      : AUTO       │  Monitor IRQ3 Wake Up   :   Disabled │
│  Slot 3 Using INT#      : AUTO       │  Monitor IRQ4 Wake Up   :   Disabled │
│                                      │  Monitor IRQ5 Wake Up   :   Disabled │
│  1st  Available IRQ     : 10         │  Monitor IRQ6 Wake Up   :   Disabled │
│  2nd Available IRQ      : 11         │  Monitor IRQ7 Wake Up   :   Disabled │
│  3rd  Available IRQ     :  9         │  Monitor IRQ8 Wake Up   :   Disabled │
│  4th  Available IRQ     : 12         │  Monitor IRQ9 Wake Up   :   Disabled │
│  PCI IRQ Actived By     : Edge       │  Monitor IRQ10 Wake Up  :   Disabled │
│                                      │  Monitor IRQ11 Wake Up  :   Disabled │
│  PCI IDE Controller     : Enabled    │  Monitor IRQ12 Wake Up  :   Disabled │
│  PCI IDE IRQ map To     : ISA        │  Monitor IRQ13 Wake Up  :   Disabled │
│                                      │  Monitor IRQ14 Wake Up  :   Disabled │
│                                      │  Monitor IRQ15 Wake Up  :   Disabled │
│  IDE Primary Master PIO    : AUTO    ├──────────────────────────────────────┤
│  IDE Primary Slave   PIO   : AUTO    │  ESC  : Quit       ↑↓ → ← : Select Item│
│  IDE Secondary Master PIO: AUTO   F1 │  : Help         PU/PD/+/- : Modify    │
│  IDE Secondary Slave PIO   : AUTO    │  F5   : Old Values  (Shift) F2 : Color│
│                                      │  F6   : Load BIOS Defaults            │
│                                      │  F7   : Load Setup Defaults           │
└─────────────────────────────────────┴──────────────────────────────────────┘
```

Slot 1 Using INT#
Slot 2 Using INT#
Slot 3 Using INT#

    AUTO   : BIOS will -ask the PCI device which INT(A-D) does it want to use for interrupt
                           -check out which IRQ is available from the above
                           -tell the device which IRQ has been assigned to it
    A,B,C,D : these options are reserved for Dirty cards from which the system BIOS cannot tell
              which INT does it use.

IRQs for PCI slots

The options "1st Available IRQ," "2nd Available IRQ," "3rd Available IRQ," and "4th Available IRQ" specify which available IRQs will be assigned by the System BIOS to the found PCI devices.

PCI IRQ Actived By

This option sets the PCI IRQ signal trigger method.

PCI IDE Controller

This option enables or disables on-board PCI IDE controller.

PCI IDE IRQ Map To

PCI-AUTO :   The BIOS will :
                    - scan for PCI IDE devices & determine the location of the PCI IDE device
                    - assign IRQ 14 for the   primary IDE INT#
                            IRQ 15 for the secondary IDE INT#
                    - assign IRQ 14 for the   primary IDE device
                      assign IRQ 15 for the secondary IDE device
ISA   :   The BIOS will not assign any IRQs even if PCI IDE card is found because some IDE
                    cards connect the IRQ 14 & 15 directly from ISA slot through a Legacy Header.

IDE Primary Master PIO

This option specifies the hard drive mode of primary master or set to auto-detection.

IDE Primary Slave PIO

This option specifies the hard drive mode of primary slave or set to auto-detection.

IDE Secondary Master PIO

This option specifies the hard drive mode of secondary master or set to auto-detection.

IDE Secondary Slave PIO

This option specifies the hard drive mode of secondary slave or set to auto-detection.

WakeUp Event In Inactive Mode

These option set up which means are used to wake up the system from Inactive Mode to Normal Mode.

3.8 Load BIOS Defaults

BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burn into the ROM.

3.9 Load Setup Defaults

Chipset defaults indicates the values required by the system for the maximum performance. The OEM manufacturer may change to defaults through MODBIN before the binary image burn into the ROM.

3.10 Password Setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

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.

3.11 IDE HDD Auto Detection

Automatically configure hard disk parameters.

3.12 Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

3.13 Exit Without Save

Abandon all CMOS value changes and exit setup.

4. TROUBLE SHOOTING GUIDE

4.1 No Display After Power On

Check the following points if you face a "No Display " problem after power on.

- The interface cards must be inserted into the system slots properly and the gold fingers on them must be clean. The gold fingers can be cleaned with freon or alcohol.
- The clock chip speed (JP4) must be set to match with the CPU speed. If the clock chip speed is set faster than the CPU speed, e.g. 60MHz clock chip speed with a P54C-75 CPU, the system will have no display after power on.
- The SIMMs must be inserted to the sockets (SIMM1, SIMM2, SIMM3, SIMM4) properly and have complete contact with the socket pins. Otherwise there will be a "No Dispaly" problem.

4.2 Cannot Boot Up

Check the following points if you face a "Cannot Boot Up" problem.

- The cache RAM setting (JP9, JP10, JP11, JP12) must be correct and the SRAM must be inserted in the correct position. Otherwise there will have "Cannot Boot Up" problem.
- Make sure the hard disk drive / floppy disk drive / IDE controller card / Super I/O card is in good condition. The cables must be connected to them in the correct direction. Otherwise there will be "Cannot Boot Up" problem

4.3 No System Management Mode

Check the following points if you face a "No System Management Mode" problem.

- Make sure the setting of the "POWER MANAGEMENT SETUP" of the BIOS CMOS setup is correct. Otherwise the PT-730A will not have SMM function.

4.4 General Notes

- If, on the first time installation, an error message **<CMOS CHECKSUM ERROR>** appears on the screen, please follow these steps : - (a) Leave the system on for about 15-30 minutes to recharge the battery, then you can enter the system configuration. (b) Alternatively, leave your system on for about 24 hours to recharge the battery fully.
- If you have switched off the computer system for more than two weeks, you might be required to recharge the battery fully.
- Any hard disk cable longer than the standard type is not recommended for used with PT-730A. Too long a hard disk cable will make the Green PC circuit unable to monitor the hard disk activity.

5. BIOS Reference

5.1 POST Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP will be shown in the information box at the bottom.

POST Beep

Currently there is only one beep code in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery.   Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error
PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete
PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.

***   Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration
PLEASE RUN EISA CONFIGURATION UTILITY

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

***   NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found
PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.

*** NOTE; When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should Have EISA Board But Not Found
PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

*** NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

*** NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong Board In Slot
PLEASE RUN EISA CONFIGURATION UTILITY

The board ID does not match the ID stored in the EISA non-volatile memory.

*** NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

5.2 POST Codes

NOTE: EISA POST codes are typically output to port address 300h. ISA POST codes are typically output to port address 80h.

POST (hex)	Name	Description
C0	Turn Off Chipset Cache	OEM Specific-Cache control
1	Processor Test 1	Processor Status (1FLAGS) Verification. Tests the following processor status flags carry, zero, sign, overflow, The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
2	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00.
3	Initialize Chips	Disable NMI, PIE, AIE, UEI, SQWV Disable video, parity checking, DMA Reset math coprocessor Clear all page registers, CMOS shutdown byte Initialize timer 0, 1, and 2, including set EISA timer to a known state Initialize DMA controllers 0 and 1 Initialize interrupt controllers 0 and 1 Initialize EISA extended registers.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, Initialize keyboard	Keyboard controller initialization.
6	Reserved	
7	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection
8	Setup low memory	Early chip set initialization Memory presence test OEM chip set routines Clear low 64K of memory Test first 64K memory.
9	Early Cache Initialization	

A	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup.
F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts then verify no interrupt mask register is on.
18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity/IO Check)	Verify NMI can be cleared.
1A		Display CPU clock
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests an clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).
20	Enable Slot 0	Initialize slot 0 (System Board).
21-2F	Enable Slots 1-15	Initialize slots 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1MB using various patterns. NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be "skipped" with ESC key in EISA mode.
33-3B	Reserved	

3C	Setup Enabled	
3D	Initialize & Install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values
40		Display virus protest disable or enable
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and any drives.
42	Initialize Hard Drive & Controller	initialize hard drive controller and any drives.
43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i.e., any non-fatal errors that were detected during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker Enable NMI, Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from C8000h to EFFFFh. NOTE: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h: BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup
61	Set Boot Speed	Set system speed for boot
62	Setup NumLock	Setup NumLock status according to Setup
63	Boot Attempt	Set low stack Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1- Page 1, E2 - Page 2, etc.
FF	Boot	

5.3 DIAGRAM LAYOUT

See Diagram 1