TR5510 AIO

User's Man ual   (fo r Award BIOS)

V1.3

Jan,1996

This mainboard requires correct configuration information; otherwise, a malfunction may result.

Static electricity can cause serious damage to integrated circuit chips. To avoid building up a static electric charging on your body, be sure you discharge any static electricity by grounding yourself before handling the chips. If chips are handed from one person to another, they should touch hands first, then pass the chips.

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1 **Introduction**

TR5510 AIO is a IBM PC/AT compatible mainboard based on the Intel 430FX PCI set and UMC 8669 Plug and Play Super AT I/O controller. Other on-board specifications include 3 AT Bus slots, 4 PCI Bus slots, 2 memory banks support memory size up to 128MB, and 256/512KB cache memory size.

General Specifications

Processor:	Intel Pentium P54C 75/90/100/120/133/150/166 MHz, P54CT, P54CTB Future CPU at 50/60/66 MHz host clock speed Cyrix 6X86 - P120+, P133+, P150+, P166+
Chipset:	Intel 430FX PCIset UMC UM8667 (I/O TTL Integration) UM8669 (Plug and Play Super AT I/O) or SMC669 (Optional)
System BIOS:	Award (128K Flash ROM)
System Memory:	Supports two banks of DRAM with memory size up to 128MB. Also support double side SIMM.
External Cache:	Write-back architecture. Either on-board asyncronous standard SRAM or one Cache module slot for synchronous Pipelined Burst SRAM supports 256 or 512 KB cache size.
Slots:	3 AT-Bus slots 4 PCI slots 1 Cache Module slot
I/O Connectors:	Two Serial Ports (16550 compatible UARTs) One Parallel Port (Standard/ECP/EPP) One FDC Connector (360K, 720K, 1.2MB, 1.44MB, or 2.88MB) Two PCI IDE Connectors (support 4 fast IDE interface with DMA or PIO transfer) One AT Keyboard Connector (or PS/2 Keyboard Connector)
Form Factor:	3/4 Baby AT
PCB:	4 layers

Features

❑ **CPU:**
  ▷ ZIF socket 7 with VRM connector (optional) supports Intel standard/ VRE/VRM Pentium ™ P54C 75/90/100/120/133/150/166 MHz P54CT, P54CTB CPU or future CPU at 50/60/66 MHz host clock speed. Cyrix 6X86 - P120+,P133+,P150+, P166+ CPU.

❑ **BIOS:**
  ▷ Award BIOS with Flash ROM support.
    Ä PNP specification V10a
    Ä APM specification V11
    Ä PCI specification V20
    Ä CD-ROM boot.

❑ **Memory:**
  ▷ Four pieces of 72 -pin SIMM sockets with memory size from 4MB to 128MB All support double side SIMMs.
  ▷ EDO/Hyper page mode (X -2-2-2 reads) or standard page mode DRAMs (X-3-3-3 reads) support.
  ▷ 4 Qword deep buffer for 3 -1-1-1 posted write cycles.
  ▷ Supports symmetrical and asymmetrical DRAMs.

❑ **Cache:**
  ▷ Supports the write -back ar chit ect u r e fo r CPU's in t er n al fir s t level (L1) cache and external secondary level (L2) cache.
    Ä 256KB or 512KB L2 cache size is supported by: On-board asynchronous standard SRAM or One slot for synchronous Pipelined Burst SRAM module.
    Ä Direct mapped organization.
    Ä Cache hit read/write cycle timi ngs at 3 -1-1-1 with Pipelined Burst SRAM's .
    Ä Back-to-Back read cycles at 3 -1-1-1-1-1-1-1 with Pipelined Burst SRAM's .

❑ **RTC:** Uses Dallas 12887A compatible RTC module (Internal 128 byte of CMOS RAM).

❑ **Slots:**
  ▷ 3 16-bit ISA slots with 100% ISA compatible functions.
  ▷ 4 32-bit PCI slots support PCI master.
    Ä PCI specification version 20.
    Ä CPU to PCI memory write posting with 4 Word deep buffers.
    Ä Converts Back-to-Back sequential CPU to PCI memory writes to PCI Burst writes.
  ▷ One cache module slot supports asynchronous/synchronous Burst and Pipelined Burst SRAM.

❑ **IDE:**
  ▷ Build-in Intel 430FX PCI set chip 32-bit PCI IDE interface with 2 IDE channels.
  ▷ Supports up to PIO mode 4 timing or DMA mode 2 with transfer rate timing up to 22MB/sec.

❑ **FDC:**
  ▷ Two floppy drives support 360K, 720K, 1.2M, 1.44M, 2.88M, and 3 mode floppy drives.

❑ **I/O:**
  ▷ One multi-mode parallel port which include enhanced (EPP) and high speed (ECP) support.
  ▷ Two high speed 16C550 compatible UARTs.

❑ **Power Management:**
  ▷ Compatible with EPA "Energy Star" specific
  ▷ Fully compatible with Microsoft APM V1.1.
  ▷ Supports STOPCLK & SUSPEND function for Intel Pentium CPU.
  ▷ Programmable idle detector including one programmable I/O & one memory region.
  ▷ Suspend/Resume function support.
  ▷ Supports 4 power management modes: Full-on, Doze, Standby, and Suspend modes.

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2 Memo ry Co n figuratio n s

SystemMemory

TR5510AIOusesSIMM(Single -In-line-Memory Module)foritssystemmemory. Itaccepts aminimum of4MBand amaximum of128MBmemory size.Thereare twomemorybankswhichsupport1/2/4/8/16/32/64 MB72 -pin, single- and/or double-densitySIMMs.

> *DRAM insertion on every bank should come in pair and of the same type (same size and same density). For instance, if you only have two SIMM modules, you cannot install one module in socket SIMM1 and another module of the same type on the SIMM3. Likewise, memory type mixing is not allowed within a bank.*
>
> *The DRAM type of SIMM1 & SIMM2 is independent of SIMM3 & SIMM4.*

Thefollowingtable listssomepossibleSIMMmodulecombinations andthetotal memory sizeofeachcom bination.

Bank 0		Bank 1		Total
SIMM1	SIMM2	SIMM3	SIMM4	
1M (single)	1M (single)	1M (single)	1M (single)	4MB
2M (double)	2M (double)	-	-	4MB
2M (double)	2M (double)	2M (double)	2M (double)	8MB
4M (single)	4M (single)	-	-	8MB
4M (single)	4M (single)	4M (single)	4M (single)	16MB
8M (double)	8M (double)	-	-	16MB
8M (double)	8M (double)	8M (double)	8M (double)	32MB
2M (double)	2M (double)	16M (single)	16M (single)	36MB
2M (double)	2M (double)	16M (single)	16M (single)	36MB
8M (double)	8M (double)	16M (single)	16M (single)	48MB
16M (single)	16M (single)	16M (single)	16M (single)	64MB
32M (double)	32M (double)	-	-	64MB

Continued **.**

Bank 0	Bank 1	Total

SIMM1	SIMM2	SIMM3	SIMM4	
32M (double)	32M (double)	32M (double)	32M (double)	72MB
32M (double)	32M (double)	8M (double)	8M (double)	80MB
32M (double)	32M (double)	16M (single)	16M (single)	96MB
32M (double)	32M (double)	32M (double)	32M (double)	128MB

Table 2 -1.   System Memory Configurations

Cache Memory Subsystem

The TR5510AIO supports standard SRAM and Pipelined Burst SRAM, but notice that just one kind of the SRAM's can be used on -board at one time. For example, if the Pipelined Burst SRAM module have existed on the cache module slot (U24), you should not to plug any standard SRAM on your mainboard.

> The TR5510AIO mainboard does not support the kind of Pipelined Burst SRAM module without TAG RAM on it.

The table below lists the   cache memory configurations.

Size	Standard SRAM		Pipelined Burst SRAM
	TAG RAM (U17)	Data SRAM (U29 - U36)	Module insertion on U24
256KB	32Kx8 or 16Kx8 (+5V)	32Kx8 ☆	None
	None		256KB (32Kx32x2) (+3.3V)
512KB	32Kx8 or 16Kx8 (+5V)	64Kx8 ☆	None
	None		512KB (32Kx32x4) (+3.3V)

☆:   *Users can use pure +3.3V SRAM or +3.3V/5V mixed mode SRAM as the standard data SRAM. Using the wrong type of SRAM could cause severe damage to the mainboard.*

3 Jump ers an d Co n n ecto rs

Setting the Jumpers

The table below summarizes the functions and jumper settings on the TR5510AIO. You can refer to the next section for the graphic descriptions.

Function		Jumper Settings	
CPU Type☆	Pentium 75MHz (50MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 open open
	Pentium 90MHz (60MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 3-4 open
	Pentium 100MHz (66MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 1-2, 3-4 open
	Pentium 120MHz (60MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 3-4 short 1-2
	Pentium 133MHz (66MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 1-2, 3-4 short 1-2
	Pentium 150MHz (60MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 3-4 short 1-2, 3-4
	Pentium 166MHz (66MHz Host Clock) (Reserved)	J13 JP4 JP8	short 6-7, 21-22 short 1-2, 3-4 short 1-2, 3-4
	Cyrix 6X86 -P120+ (50MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 open short 1-2
	Cyrix 6X86 -P133+ (55MHz Host Clock) (U10 uses IMI 604 only)	J13 JP4 JP8	short 6-7, 21-22 short 1-2 short 1-2
	Cyrix 6X86 -P150+ (60MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 3-4 short 1-2
	Cyrix 6X86 -P166+ (66MHz Host Clock)	J13 JP4 JP8	short 6-7, 21-22 short 1-2, 3-4 short 1-2

Continued **.**

Function	Jumper Settings

CPU Voltage	+3.3V	JP17	short 5-6
	+3.38V (default)	JP17	short 3-4
	+3.52V	JP17	short 1-2
SRAM Voltage	+5V (default) (for +3.3V/5V Mixed mode SRAM)	JP12 JP13	short 1-2 short 1-2
	+3.3V (for pure +3.3V SRAM or Pipelined Burst SRAM)	JP12 JP13	short 2-3 short 2-3
BIOS Voltage	Page Mode Flash (default)	JP23	open
	Programming Flash ROM with +5 Voltage	JP23	short 1-2
	Programming Flash ROM with +12 Voltage	JP23	short 2-3
Cache Memory Size	**If using Standard SRAMs ...**		
	256K (default)	JP7 JP21 JP22	short 1-2 short 2-3 short 1-2
	512K	JP7 JP21 JP22	short 2-3 short 1-2 short 2-3
	If using Pipelined Burst SRAM Module ...		
	256K and 512K	JP7 JP21 JP22	open open open
Pipelined Burst SRAM **Module**	TAG is installed	JP19	short 1-2
	TAG is not installed ✍	JP19	short 2-3
System Clock	PCI Clock/3	JP3	short 1-2
	PCI Clock/4 (default)	JP3	short 2-3
On-board Multi I/O	Enable (default)	JP1	short 1-2
	Disable	JP1	short 2-3
CMOS Mode	Normal (default)	JP2	open
	CMOS Data Clear	JP2	short

Table 3 -1. Jumper Settings

✍: If **TAG is not installed** in the Pipelined Burst SRAM Module, It is necessary to install   the U17 (32Kx8 +5V Standard SRAM).

✰: *The table below presents the detailed jumper settings for different CPU clock. For example, if Pentium 100MHz CPU is installed, you should set Host Clock as 66MHz and CPU Core Clock as Host Clock x 1.5.*

Function		Jumper Settings	
Host Clock	50 MHz	JP4	open
	60 MHz	JP4	short 3-4
	66 MHz	JP4	short 1-2, 3-4
CPU Core Clock	Host Clock x 1.5	JP8	open
	Host Clock x 2	JP8	short 1-2
	Host Clock x 2.5	JP8	short 1-2, 3-4
	Host Clock x 3	JP8	short 3-4

GraphicDescriptionsofJumperSettings

 means Pins 1 & 2 are set as "short"

**CPU
Type**

 means that this jumper is set as "open."

1. Pentium75MHz(50MHzHostClock)
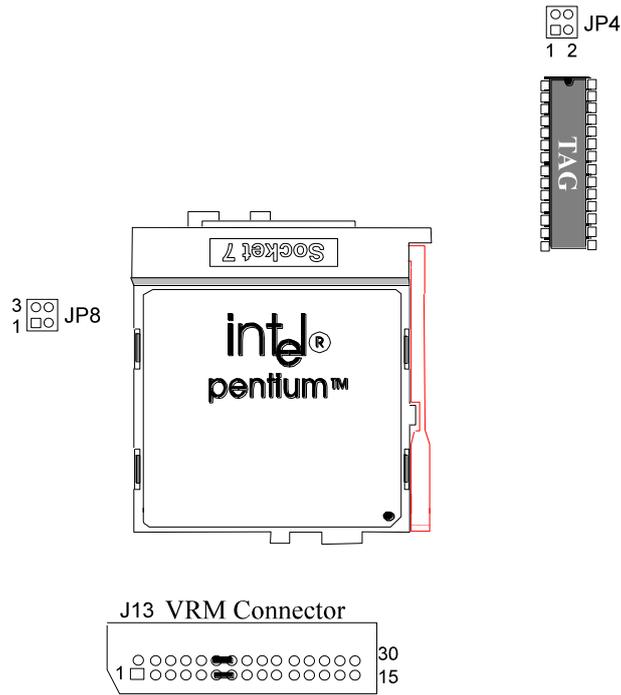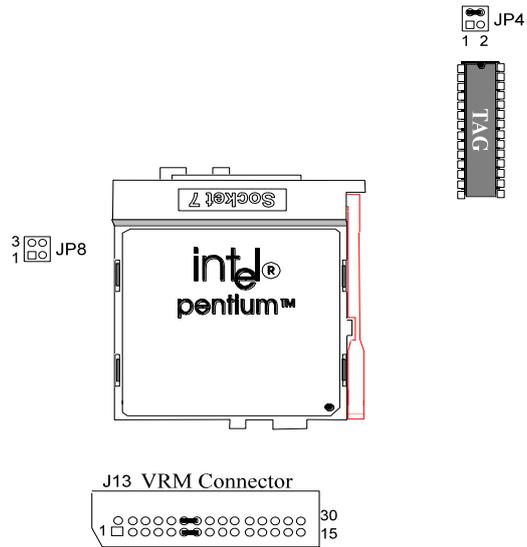
JP4
1 2

TAG

3
1 JP8

Socket 7

intel®
pentium™

J13 VRM Connector

1   30
     15

2.   Pentium 90MHz (60MHz Host Clock)

JP4
1 2

TAG

3 JP8
1

Socket 7

intel ®
pentium ™

J13 VRM Connector
1 ████████████████ 30
15

3.   Pentium 100MHz (66MHz Host Clock) CPU

JP4
1 2

TAG

3 JP8
1

Socket 7

intel ®
pentium ™

J13 VRM Connector
1 ████████████████ 30
15

3-5

4.   Pentium 120MHz(60MHz Host Clock)

JP4
1 2

TAG

Socket 7

3 JP8
1

intel®
pentium™

J13 VRM Connector

30
1   15

5.   Pentium 133MHz(66MHz Host Clock)

JP4
1 2

TAG

Socket 7

3 JP8
1

intel®
pentium™

J13 VRM Connector

30
1   15

6.   Pentium150MHz(60MHzHostClock)

JP4
1 2

TAG

3
1 JP8

Socket 7

intel®
pentium™

J13 VRM Connector

1 ○○○○○●○○○○○○○ 30
  □○○○○○●○○○○○○○ 15

7.   Pentium166MHz(66MHzHostClock)

JP4
1 2

TAG

3
1 JP8

Socket 7

intel®
pentium™

J13 VRM Connector

1 ○○○○○●○○○○○○○ 30
  □○○○○○●○○○○○○○ 15

3-7

8. Cyrix 6X86 -P120+(50MHz Host Clock)

JP4
1 2

TAG

Socket 7

3 JP8
1

Cyrix
X86

J13 VRM Connector

1 ──────────── 30
──────────── 15

9. Cyrix 6X8 6-P133+(55MHz Host Clock)(U10 uses IMI604 only)

JP4
1 2

TAG

Socket 7

3 JP8
1

Cyrix
X86

J13 VRM Connector

1 ──────────── 30
──────────── 15

3-8

10. Cyrix6X86 -P150+(60MHzHostClock)

JP4
1 2

TAG

3 □□ JP8
1 ■●

Socket 7

Cyrix
X86

J13 VRM Connector
1 □ 00000 ●●000 00000   30
     0000● ●000 00000   15

11. Cyrix6X86 -P166+(66MHzHostClock)

JP4
1 2

TAG

3 □□ JP8
1 ■●

Socket 7

Cyrix
X86

J13 VRM Connector
1 □ 00000 ●●000 00000   30
     0000● ●000 00000   15
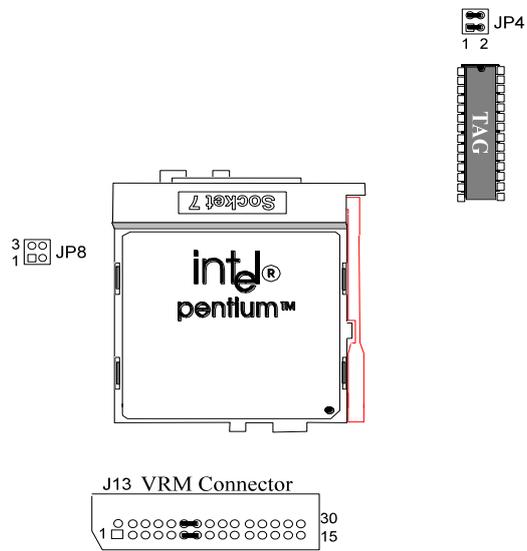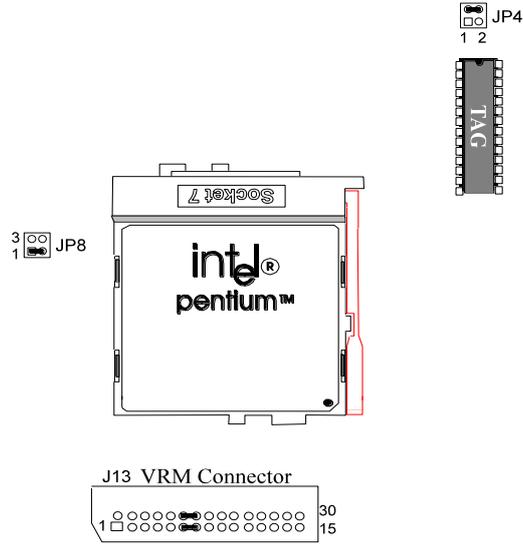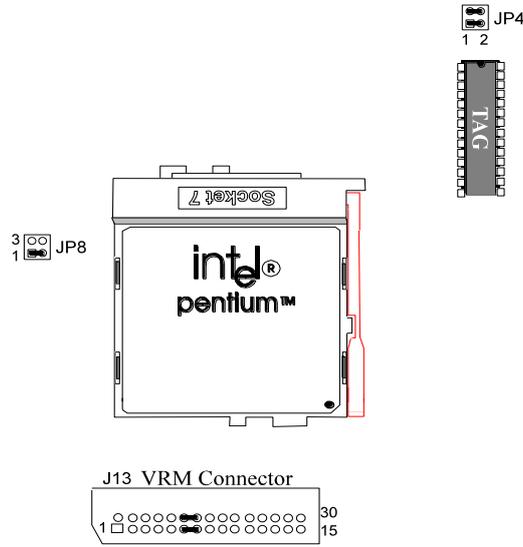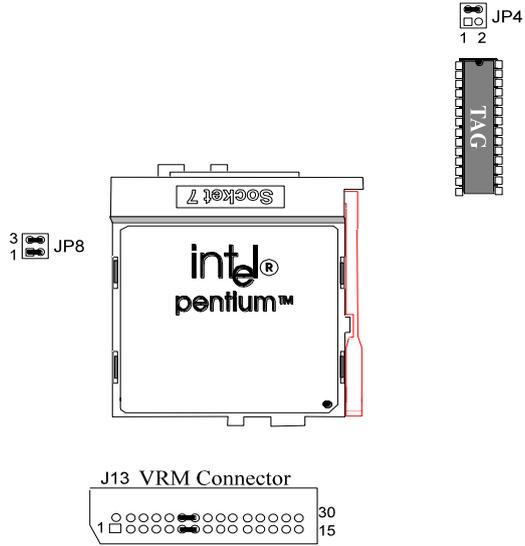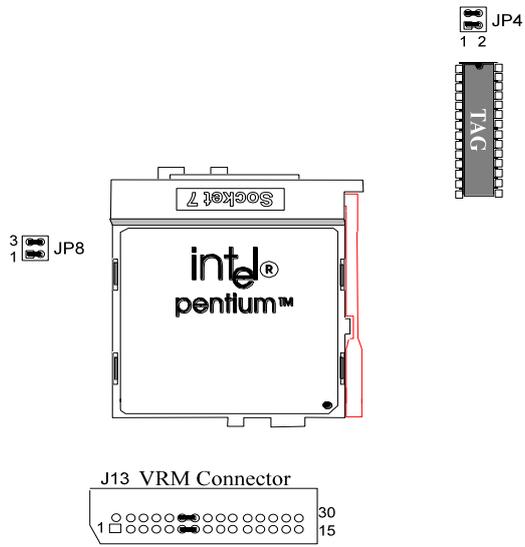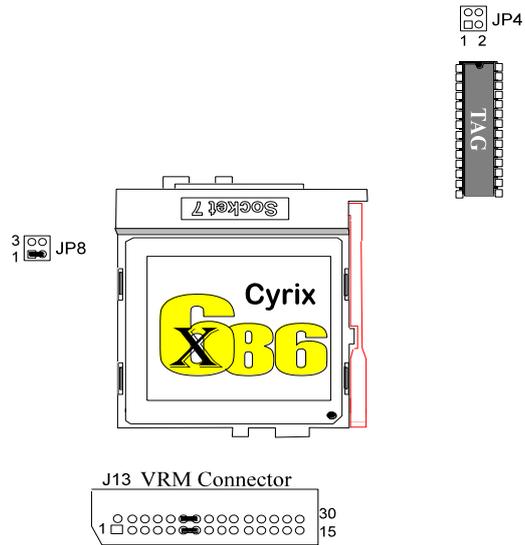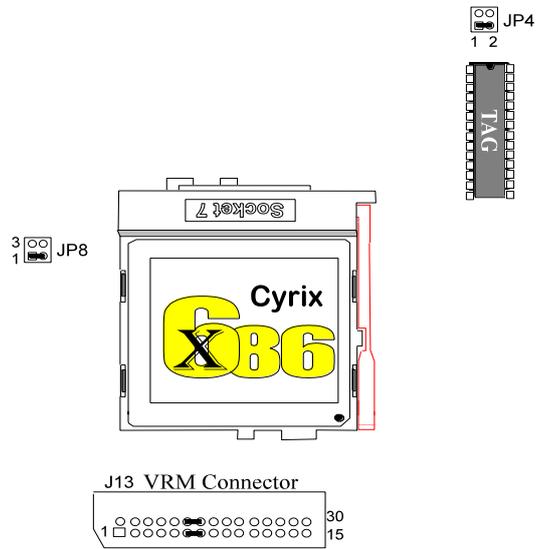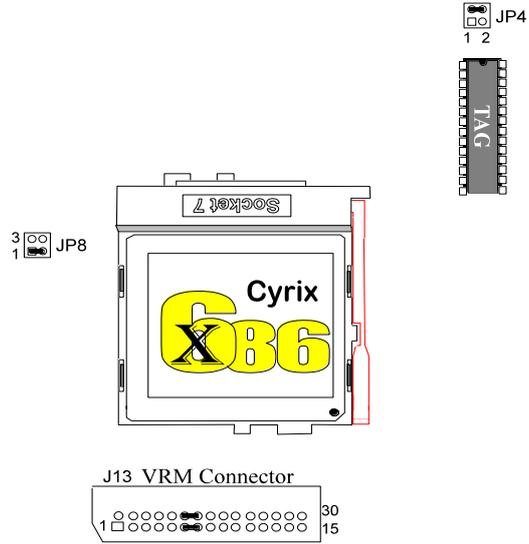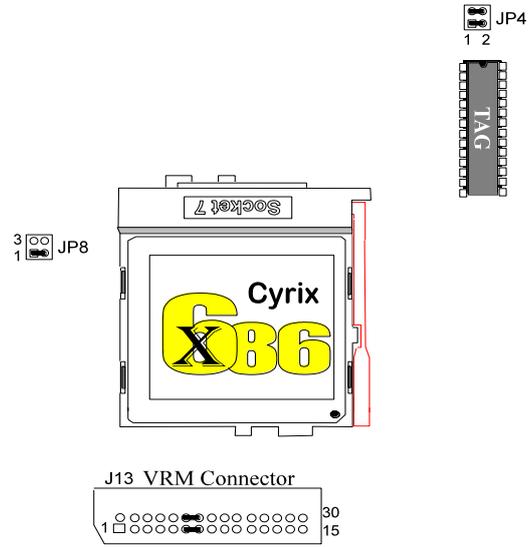
External Cache Memory Size

1. 256KB

Pinelined Burst SRAM

Burst Cache Module

1
JP7

U17
Note
JP19

TAG

JP12
JP13
Standard SRAM Sockets

JP21
JP22
1

U29 U30 U31 U32 U33 U34 U35 U36

Note: (1). JP19: Short 1-2 if TAG is installed in Pipelined Burst SRAM Module.
JP19: Short 2-3 if TAG is not installed in Pipelined Burst SRAM Module.
(2). If TAG is not installed in the Pipelined Burst SRAM Module, it is necessary
to install U17(32Kx8 +5V Standard SRAM).

Or

Standard SRAM

1
JP7

TAG

U17

Burst Cache Module Slot

Note JP12
JP13
32Kx8 Standard SRAM

JP21
JP22
1

U29 U30 U31 U32 U33 U34 U35 U36
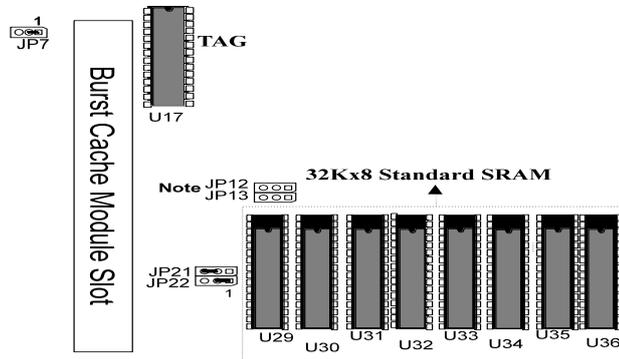
Note: JP12: short 1-2, JP13: short 1-2 for mixed mode cache setting.
JP12: short 2-3, JP13: short 2-3 for pure cache setting.

2.   512KB

PipelinedBurstSRAM
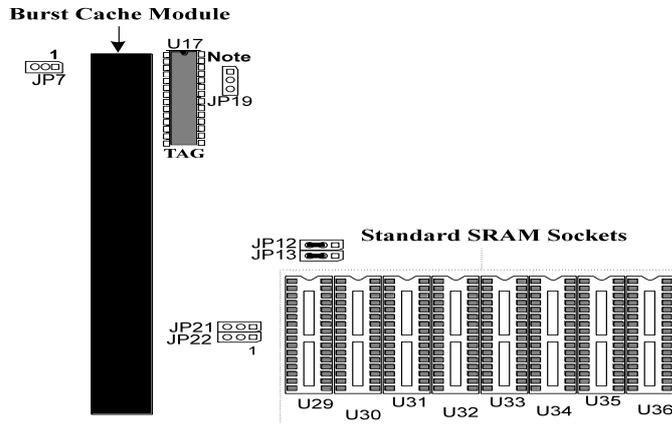
Burst Cache Module

Note: (1). JP19: Short 1-2 if TAG is installed in Pipelined Burst SRAM Module.
            JP19: Short 2-3 if TAG is not installed in Pipelined Burst SRAM Module.
       (2). If TAG is not installed in the Pipelined Burst SRAM Module, it is necessary
            to install U17(32Kx8 +5V Standard SRAM).

Or

StandardSRAM
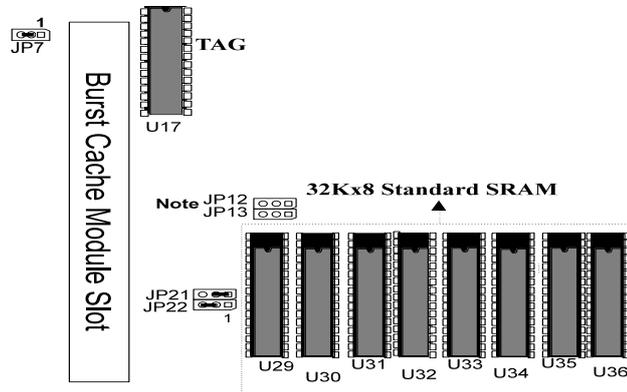
Note: JP12: short 1-2, JP13: short 1-2 for mixed mode cache setting.
       JP12: short 2-3, JP13: short 2-3 for pure cache setting.

CPU Voltage
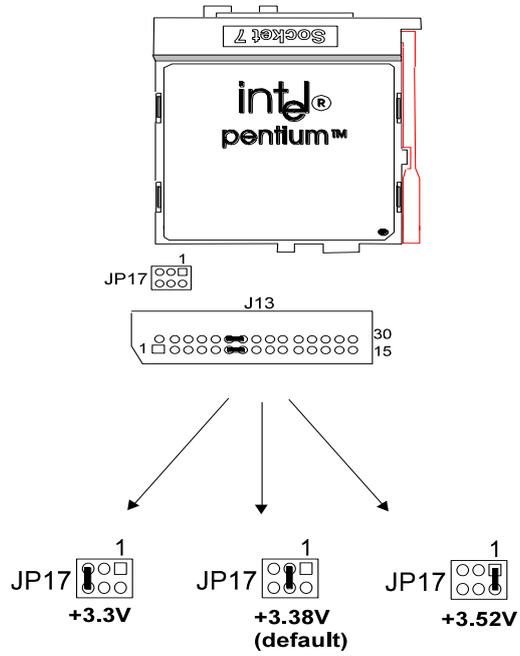
Connectors

The followin g table lists all connector located on the TR5510AIO They are used to connect with some peripheral devices to enhance the operating performance of the system Please refer to the mainboard layout figure on the next page for the positions of all the con   nectors.

Connector	Function
J1	PS/2 Mouse Connector (optional)
J2	AT Keyboard Connector
J3	PS/2 Keyboard Connector (optional)
J4	PS/2 Mouse Connector (5x1 Header)
J5	Serial Port 1 Connector (COM1)
J6	Parallel Port Connector
J7	Floppy Connector
J8	Serial Port 2 Connector (COM2)
J10	Secondary Hard Disk Connector
J11	Primary Hard Disk Connector

J12

Reset Switch			Turbo Switch		SMI Switch		Turbo LED		
10	9	8	7	6	5	4	3	2	1
○	○	X	○	○	○	○	−	+	X
○	○	○	○	X	○	○	−	○	+
20	19	18	17	16	15	14	13	12	11
Speaker					Keyboard Lock				

X: No Function

Connector	Function
J13	VRM Socket
J15	IR Connector
JP16	HDD LED Connector
JP26	CPU Fan Connector

Table 3 -2. Connectors

3-13

BoardLayout

Figure 3 -1. TR5510 AIO Mainboard Layout

4 Built-in BIOS Setup Program

SETUP Program

Use the BIOS for TR5510AIO to record changes in your hardware and to control its special features. The setup program uses a number of menus in which you can specify changes to your hardware and turn the special features to on or off.

To enter the BIOS setup program, turn on or reboot the system. Press the <DEL> key when the system displays " Press DEL to enter SETUP".

The following screen will then be displayed.

```
                    ROM PCI/ISA BIOS (2A59CE1N)
                         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 CONFIGURATION SETUP
    LOAD BIOS DEFAULTS
    LOAD SETUP DEFAULTS
   Esc : Quit                     ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup        (Shift)F2  : Change Color

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

Figure 4 -1. SETUP Main Menu

It is highly recommended that you list down all the values of the SETUP program before making any changes. Doing so will save a lot of time restoring the system back in the event of a configuration memory loss.

> *On-screen instructions at the bottom of each screen explain how to use the program.*

❑ **STANDARD CMOS SETUP** - allows checking or modification of general configuration information.

❑ **BIOS FEATURES SETUP** - used to set the various system options for the user, including the virus warning, external cache, memory parity check, security option, boot operations, typematic rate settings, and video BIOS shadow, etc.

❑ **CHIPSET FEATURES SETUP** - dedicated for the user who wishes to program the chipset features.

❑ **POWER MANAGEMENT SETUP** - allows the programming of the time out functions of six devices If the device is not active, Power Management Function will slow down the CPU speed to 8 MHz an   d both IDE and monitor will be put into standby mode.

❑ **PCI CONFIGURATION SETUP** - used to set the various system functions and internal addresses of the PCI devices and onboard PCI IDE controller.

❑ **LOAD BIOS DEFAULTS** - loads the BIOS default values that would   allow safe booting of the system in the event a BIOS configuration memory loss.

❑ **LOAD SETUP DEFAULTS** - allows of automatic configure all of the options in the Standard CMOS Setup BIOS Features Setup and Chipset Features Setup with the SETUP defaults.

❑ **PASSWORD SETTING** - Password is required when entering and changing the SETUP option or booting your system Users can change the current password stored in the CMOS by accessing this option.

❑ **IDE HDD AUTO DETECTION** - allows of automatic detect the hard disk drive type(s) including the number of cylinders and heads, write pre   - compensation time, read/write head landing zone, and number of sectors per track.

❑ **SAVE & EXIT SETUP** - saves the changes you have made in the SETUP program, then exits and reboots the system.

❑ **EXIT WITHOUT SAVING** - abandons all previous settings then exits and reboots the system.

To choose an item from the SETUP main menu, move the cursor using the   ↑,↓,→,← arrow keys and press <Enter>. To modify the setting of an option, simply press the <PgUp> or <+> and the <PgDn> or <   -> keys Press the <F2> key when changing the color setting, <F1> for a context sensitive help function, and the <ESC> key when quitting SETUP.

StandardCMOSSetup

```
                    ROM PCI/ISA BIOS (2A59CE1N)
                       STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC
┌─────────────────────────────────────────────────────────────────────────┐
│  Data (mm:dd:yy) : Sat, Jly  10 1995                                      │
│  Time (hh:mm:ss) :  1 : 58 :  5                                           │
│                                                                           │
│                                                                           │
│  HARD DISKS          TYPE   SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE    │
│  ─────────────────────────────────────────────────────────────────────   │
│  Primary Master  : Auto      0       0    0      0     0      0   AUTO     │
│  Primary Slave   : Auto      0       0    0      0     0      0   AUTO     │
│  Secondary Master: Auto      0       0    0      0     0      0   AUTO     │
│  Secondary Slave : Auto      0       0    0      0     0      0   AUTO     │
│                                                                           │
│                                                                           │
│  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                         │
└─────────────────────────────────────────────────────────────────────────┘
```

Figure 4 -2. Standard CMOS SETUP Screen

Date - allowsmanual settingoftheelectronic calendaronthemainboard.

Time - setsthesystem'sinternal clockwhichincludes hour,minutes,and seconds.

PrimaryMaster/P rimarySlave/SecondaryMaster/SecondarySlave - specify thephysicalandelectronic properties ofthestandardharddiskdrivesinstalled. Relevant specifications include thetype,numberofcylinders (CYLS),heads (HEAD),writepre -compensation time(PREC OMP),read/write headlandingzone (LANDZ),numberofsectorspertrack (SECTOR),andHDDmode(MODE). Selecting " *AUTO*"(default)intheharddisktypeitemavoidsthenecessityof loadingtheHDDspecifications andthefunctionoftheIDEHDDAutoDetecti on optioninthemainmenu.ThesystemBIOSwillautomatically detecttheharddrive installed onthesystemuponbootup.

DriveA:/B: - specifiesthecapacity andformatofthefloppydriveinstalled inyour system.

Video - specifies thedisplayadapterin stalled.

HaltOn - enablesthesystemtohaltonseveralconditions/options.Thedefault value issetat" *AllErrors* ."

Base/Extended/OtherMemory - Asmallsectioninthelowerrightcornerofthe screendisplaysimportant informationaboutyoursystemwhi chincludesthebase,

extended, and other memory sizes. They are updated automatically by the SETUP program according to the status detected by the BIOS self -test. This section of the Standard CMOS SETUP screen is for viewing purpose only and manual modifications are not allowed.

BIOS Features Setup

```
             ROM PCI/ISA BIOS (2A59CE1N)
               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,CDROM  │ 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       │                                      │
│ Gate A20 Option        : Fast       │                                      │
│ Memory Parity Check    : Disabled   │                                      │
│ Typematic Rate Setting : Disabled   │                                      │
│ Typematic Rate (Chars/Sec) : 6      │                                      │
│ Typematic Delay (Msec)  : 250       │                                      │
│ Security Option        : Setup      │                                      │
├─────────────────────────────────────┼──────────────────────────────────────┤
│ PCI/VGA Palette Snoop  : Disabled   │ ESC : Quit      ↑↓→←: Select Item    │
│                                     │ F1  : Help      PU/PD/+/- : Modify   │
│                                     │ F5  : Old Values  (Shift)F2 : Color  │
│                                     │ F6  : Load BIOS Defaults             │
│                                     │ F7  : Load Setup Defaults            │
└─────────────────────────────────────┴──────────────────────────────────────┘
```

Figure 4 -3 BIOS Features Setup Screen

Virus Warning - allows the virus warning feature for the hard disk boot sector to display a warning message and produce a beep sound whenever an attempt is made to write on the hard disk's boot sector . The default value for this option is "*Disabled*".

CPU Internal Cache - enables the internal 16KB code/data cache of the Intel Pen t iu m CPU w hen s et to "*Enabled*" (defau l t).

External Cache - enables the on -board secondary cache (either standard non -burst or burst cache) when set to " *Enabled*" (default).

Quick Power On Self Test - allows the power on self test to run at either a fast or a normal speed. The available options are:

- Disabled (default)
- Enabled

Boot Sequence - selects the drive where the system would search for the operating system to run with. The available options are:

- A,C,CDROM (default)
- C,CDROM,A
- C,A,CDROM
- CDROM,C,A

SwapFloppyDrive - "*Disabled*" will effectively change the A: drive to B: and the B: to A: drive. "*Disabled*" (default) sets the floppy drives in their default states.

BootUpFloppySeek - checks whether the floppy drives installed on the system are correct or not. This option's operation usually occurs when the magnetic heads of the floppy drives produce a sound during power on self test. The available options are:

- Enabled (default)
- Disabled

BootUpNumLockStatus - sets the <NumLock> key to either on or off during system boot -up. The available options are:

- On (default)
- Off

BootUpSystemSpeed - sets the speed of the system during power on self test sequence. The available options are:

- High (default)
- Low

Gate A20 Option - boosts the performance of system with software using the 80286 protected mode such as OS/2 or UNIX. This option determines the accessibility of the extended memory. The available options are:

- Fast (default)
- Normal

Memory Parity Check - *enables* or *disables* the memory parity error check of every DRAM module on board. It is recommended to set this option to "*Disabled*" (default) when using non -parity bit DRAM modules.

Typematic Rate Setting - defines the setting of the keyboard's typematic rate. The available options are:

- Disabled (default)
- Enabled

Typematic Rate (Chars/Sec) - specifies the key repeat rate in seconds of keyboard characters. The available options are:

- 6 (default)
- 10
- 15
- 24
- 8
- 12
- 20
- 30

Typematic Delay (Msec) - selects the delay, in milliseconds, before a key repeats itself. The available options are:

- 250 (default)
- 750
- 500
- 1000

Security Option - determines whether the password will be asked for in every boot (*System*) or when entering into the SETUP program (*Setup* - default). Refer to the section entitled Password Setting for the password setting procedure.

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PCI/VGA Palette Snoop - Selects *"Enabled"* to solve the abnormal color in windows while using ISA MPEG and PCI VGA card. The available options are:

- Disabled (default)
- Enabled

Video BIOS Shadow - if you have a shadowing of the Video BIOS you may set the appropriate memory cacheable function to *"Enabled"* (default). Otherwise select *"Disabled".*

C8000-CBFFF, CC000 -CFFFF, D0000 -D3FFF, D4000-D7FFF, D8000 -DBFFF, DC000-DFFFF Shadow - if you have a shadowing of the BIOS at any of the above segments, you may set the appropriate memory cacheable function to *"Enabled"*. Otherwise select " *Disabled*"(default).

Chipset Features Setup

```
              ROM PCI/ISA BIOS (2A59CE1N)
                 CHIPSET FEATURES SETUP
                  AWARD SOFTWARE, INC.
┌─────────────────────────────────┬─────────────────────────────────┐
│ DRAM Timing          : 70 ns    │ IDE Hard Disk Master Mode: Disabled│
│                                 │ Onboard FDD Controller   : Enabled │
│ System BIOS Cacheable  : Disabled│ Onboard Serial Port 1    : COM1/3F8│
│ Video  BIOS Cacheable  : Disabled│ Onboard Serial Port 2    : COM2/2F8│
│ 8 Bit I/O Recovery Time : 1     │ Infra Red (IR) Function  : Disabled│
│ 16 Bit I/O Recovery Time : 1    │ Onboard Parallel Port    : 378H/IRQ7│
│                                 │ Parallel Mode            : SPP      │
│ IDE HDD Block Mode     : Enabled │                                    │
│ IDE Primary Master PIO  : Auto  │ IR Transfer Mode         : Half-Dup │
│ IDE Primary Slave PIO   : Auto  │                                    │
│ IDE Secondary Master PIO : Auto │                                    │
│ IDE Secondary Slave PIO  : Auto │                                    │
│ On-Chip Primary   PCI IDE: Enabled│                                  │
│ On-Chip Secondary PCI IDE: Enabled│                                  │
│ PCI Slot IDE 2nd Channel : Enabled├─────────────────────────────────┤
│                                 │ ESC : Quit       ↑↓→←: Select Item │
│                                 │ F1  : Help       PU/PD/+/- : Modify│
│                                 │ F5  : Old Values  (Shift)F2 : Color │
│                                 │ F6  : Load BIOS Defaults           │
│                                 │ F7  : Load Setup Defaults          │
└─────────────────────────────────┴─────────────────────────────────┘
```

Figure 4 -4. Chipset Features Setup Screen

DRAM Timing - configures the DRAM read/write timing for the maximum performance. The available options are:

- 60 ns
- 70 ns (default)

System BIOS Cacheable - allows caching of the different segments where there is system BIOS shadowing. The available options are:

- Enable
- Disable (default)

VideoBIOSCacheable - allowscachingofthedifferentsegmentswherethereis videoBIOSshadowingTheavailable optionsare:

- Enabled
- Disable (default)

8BtI/ORecoveryTime - definesthe8 -bitI/Orecoverytimewithoneofthe followingsystemclockoptions.

- NA
- 1 (default)/2/3/4/5/6/7/8

16BtI/ORecoveryTime - definesthe16bitI/Orecoverytiemwithoneofthe followingsystemclockoptions.

- NA
- 1 (default)/2/3/4

IDEHDDBlockMode - Theavailable optionsare:

- Enabled (default)
- Disabled

IDEPrimary/SecondaryMaster/SlavePIO - setstheadvanced harddiskP IO transfermodewhicheffectsyourharddisktransferrate.Theprogramwillauto detect themodeofthisoptionyouselect *"Auto"* Otherwiseyoumustsetthis option byyourselfTheavailable options are:

- Auto(defual)
- Mode0
- Mode1
- Mode2
- Mode3
- Mode4

On-ChipPrimary/SecondaryPCIIDE - *Enables* or *Disables* theprimaryPCIIDE ofIntelIDEcontroller Selecting *"Disabled"* canrelease IRQ14

- Disabled
- Enabled(default)

PCISlotIDE2ndChannel - *Enables* or *Disables* thesecondIDEchannelofPCI slotifuserusesthePCIIDEcardonboard

- Disabled
- Enabled(default)

IDEHardDiskMasterMode -Theavailable optionsare:

- Disabled (default)
- Enabled

OnboardFDDController - *Enables* or *Disables* thesecondIDEchannel of PCIslot ifuserusesthePCIIDEcardonboard

- Disabled
- Enabled(default)

Onboard Serial Port 1 - sets the I/O address for serial port 1.

- COM1/3F8 (default of Serial Port 1)
- COM2/2F8 (default of Serial Port 2)
- COM3/3E8
- COM4/2E8
- Disabled

Onboard Serial Port 2 - sets the I/O address for serial port 2.

- COM1/3F8 (default of Serial Port 1)
- COM2/2F8 (default of Serial Port 2)
- COM3/3E8
- COM4/2E8
- Disabled

Onboard Parallel Port - sets the I/O address for the parallel port

- 378H /IRQ 7 (default)
- 278H/IRQ 5
- 3BC/IRQ7
- Disabled

Parallel Port Mode - selects the working mode of parallel port

- SPP (default)
- EPP
- ECP
- ECP+EPP

*The default of Parallel Port Mode is SPP. If users choose the ECP+EPP or ECP option, **ECP Mode Use DMA** will be shown under **IR Transfer Mode**.*

IR Transfer Mode - The available options are:

- Half -Dup (default)
- Full -Dup

ECP Mode Use DMA - selects the DMA channel of ECP Mode to transfer you data. The available options are:

- 3 (default)
- 1

***ECP Mode Use DMA** will not be shown on the Chipset Features Setup screen until users choose the ECP+EPP or ECP option for the setting of Parallel Port Mode.*

PowerManagementSetup

```
                    ROM PCI/ISA BIOS (2A59CE1N)
                      POWER MANAGEMENT SETUP
                       AWARD SOFTWARE, INC.

Power Saving Mode   : Disabled      IRQ3   (COM2)        : ON
APM                 : Yes           IRQ4   (COM1)        : ON
Video Off Method    : DPMS          IRQ5   (LPT2)        : ON
                                    IRQ6   (Floppy Disk) : ON
Doze Mode           : Disabled      IRQ7   (LPT 1)       : ON
Stdby Mode          : Disabled      IRQ8   (RTC Alarm)   : OFF
Suspend Mode        : Disabled      IRQ9   (IRQ2 Redir)  : OFF
HDD Power Down       : Disabled     IRQ10  (Reserved)    : OFF
                                    IRQ11  (Reserved)    : OFF
IRQ3   (Wake-Up Event): ON          IRQ12  (PS/2 Mouse)  : ON
IRQ4   (Wake-Up Event): ON          IRQ13  (Coprocessor) : ON
IRQ8   (Wake-Up Event): OFF         IRQ14  (Hard Disk)   : ON
IRQ12  (Wake-Up Event): ON          IRQ15  (Reserved)    : ON

Power Down Activities              ESC : Quit        ↑↓→←: Select Item
COM   Ports Accessed : ON          F1  : Help        PU/PD/+/- : Modify
LPT   Ports Accessed : ON          F5  : Old Values  (Shift)F2 : Color
Drive Ports Accessed : ON          F6  : Load BIOS Defaults
                                   F7  : Load Setup Defaults
```

Figure 4 -5. Power Management Setup Screen

PowerSaving Mode - The available options are:

- Disabled (default)
- Max Saving
- Min Saving
- User Define

APM - sets the power management (PM) control by the APM The available options are:

- Yes (default)
- No

VideoOffMtehod - selects the video off method in standby mode. The available options are:

- Y/H SYNC+Blank
- Blank Screen
- DPMS (default)

Doze/Standby/SuspendMode - sets the time interval after system inactivity when the system enters DOZE/STANDBY/SUSPEND mode The available options are:

- Disabled (default)
- 1 Hour
- 1/2/4/6/8/10/20/30/40 Min

HDD Power Down - sets the time to power down HDD in standby mode. The available options are:

- Disabled (default)
- 1/2/3/4/5...15 Min

IRQ3/4/8/12 (Wake-Up Event) - sets the wake-up event to *"ON"* or *"OFF"* while system enters the suspend mode.

Power Down Activities - The menu also lists the Power Management SETUP (PM) events by which the system wakes up from DOZE or STANDBY modes. Switch the following parameters to *"ON"* or *"OFF"*.

- COM Ports Accessed
- LPT Ports Accessed
- Drive Ports Accessed
- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (LPT2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT1)

- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
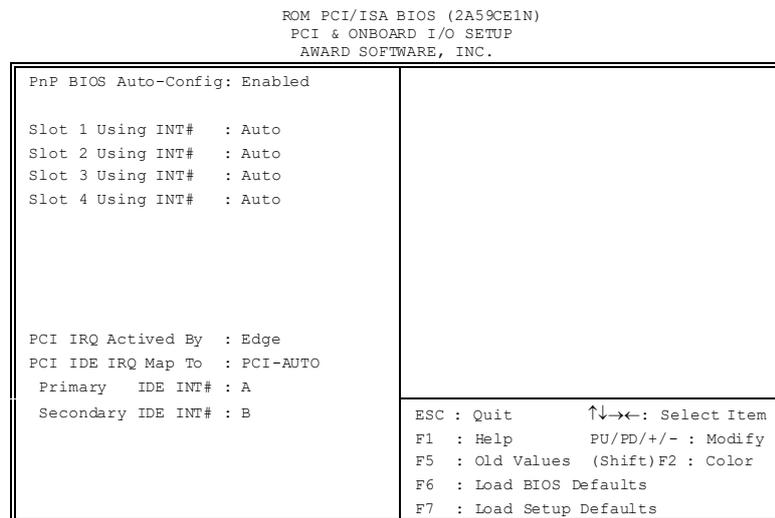- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PCI & Onboard I/O Setup

```
              ROM PCI/ISA BIOS (2A59CE1N)
                PCI & ONBOARD I/O SETUP
                 AWARD SOFTWARE, INC.
 ┌────────────────────────────────┬──────────────────────────────────┐
 │ PnP BIOS Auto-Config: Enabled  │                                  │
 │                                │                                  │
 │ Slot 1 Using INT#   : Auto     │                                  │
 │ Slot 2 Using INT#   : Auto     │                                  │
 │ Slot 3 Using INT#   : Auto     │                                  │
 │ Slot 4 Using INT#   : Auto     │                                  │
 │                                │                                  │
 │                                │                                  │
 │                                │                                  │
 │ PCI IRQ Actived By  : Edge     │                                  │
 │ PCI IDE IRQ Map To  : PCI-AUTO │                                  │
 │  Primary   IDE INT# : A        │                                  │
 │  Secondary IDE INT# : B        │ ESC : Quit      ↑↓→←: Select Item│
 │                                │ F1  : Help      PU/PD/+/- : Modify│
 │                                │ F5  : Old Values (Shift)F2 : Color│
 │                                │ F6  : Load BIOS Defaults          │
 │                                │ F7  : Load Setup Defaults         │
 └────────────────────────────────┴──────────────────────────────────┘
```

Figure 4-6. PCI & Onboard I/O Setup Screen

PnP BIOS Auto-Config - If user sel *Enabled*, the "1st/2nd/3rd/4th Available" IRQ options will disappear and the system will auto configure the available IRQ(s).

- Enabled (default)
- Disabled

> *If user sets this option to "Disabled", the "1st Av*
> *Available IRQ", "3rd Available IRQ", and "4th he IRQ" option*
> *below will not be shown on the screen.*

Slot 1/2/3/4 Using INT# - defines the INTx# assigned to every PCI slot. The available options are:

- AUTO (default)
- C
- A
- D
- B

1st/2nd/3rd/4th Available IRQ - specifies the IRQ for the PCI devices. The end user should assign an available IRQ if the PCI device needs an IRQ service. The available options are:

- NA
- 3
- 4
- 5
- 7
- 9 (3rd Available IRQ default)
- 10 (1st Available IRQ default)
- 11 (2nd Available IRQ default)
- 12 (4th Available IRQ default)
- 14
- 15

> *The "1st Available IRQ", "2nd Available IRQ", "3rd Available*
> *"4th Available IRQ" options above will not be show*
> *users set Disabled for the* **PnP BIOS Auto-Config** *setting.*

PCI IDE Actived by - programs the PCI IRQ to single edge or logic level. Level/Edge sensitivity is programmed per controller. Every IRQ input for a given bank is either **"Edge"(** default) or **"Level"** triggered.

- Edge (default)
- level

PCI IDE IRQ Map To - defines the onboard IDE IRQ Routing either from the PCI Bus or the ISA Bus. The available options are:

- PCI-AUTO (default)
- ISA
- PCI-SLOT1
- PCI-SLOT2
- PCI-SLOT3
- PCI-SLOT4

> *If user sets this options to "ISA", both the "Primary*
> *"Secondary E#" options below will not be shown o*

Primary/Secondary IDE INT# - defines the primary/secondary IDE INT# of the PCI IDE card. The available options are:

- A (default of Primary IDE INT#)
- B (default of Secondary IDE INT#)

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- C
- D

LoadBIOS Defaults

IntheeventofalossinmemoryontheconfigurationSETUP,theusercanrestore theinformationontheBIOSbyloadingitsdefaultvalues.LoadingtheBIOS defaultsprovidessafebootingofthesystem.

This option may not be able to configure all the values within the SETUP program according to the installed equipments (ie., floppy drives A: & B:, hard disk drives C: & D:).

LoadSetupDefaults

SETUPdefaultsareconsidereddefault valueswithwhichthesystemwillbeenabled toperformbetter.ThisisduetotheenablingofsomeoptionswithintheSETUP program.However,ifproblemsareencountered afterloadingtheSETUPdefaults, rebootthesystemandloadtheBIOSdefaultsinstead.

PasswordSetting

ThePasswordSettingutilityallowsyou toset,change,anddisablethepassword storedintheBIOS.Tochangethepasswordsetting,press<Enter>onthePassword Settingoptionofthemainmenuandthentypethenewpassword.

Thepasswordcanbeatmost6characters long.Theprogramwillre quireyouto confirmthenewpasswordbeforeitexits andenables theutility.Todisablethe passwordsetting,pressthe<F1>oncetheprogramasksyoutoenterthenew password.

Configure the Security Option within the BIOS Features Setup corresponding to the setting in this utility.

IDEHDDAutoDetection

TheIDEHDDAutoDetectionprovides autoconfiguration oftheharddriveinstalled inthesystem.ItsupportsLBA,Large,andNormalmodes.Ifthesystem'sharddisk drivehasacapaci tyofover528MBandsupportsLBAfunctions,youmayenable eithertheLBAmodeortheLargemode.Ontheotherhand,iftheharddiskdrive's capacity isover528MBbutdoessupportLBAfunctions,youmayenabletheLarge modeinordertouseover528MB.

a. *The LBA and Large modes will only appear on the screen when the installed hard disk drive is specified to support the LBA mode.*

b. *In the case when a hard disk drive's cylinder specification exceeds 1024, and does not support the LBA functions, only the Large mode will be displayed on the screen.*

c. *With a hard disk drive supporting cylinders below 1024, only the Normal mode will appear on the screen. The Normal mode will also be shown on the screen under conditions a & b above.*

d. *Hard disk drives with less than 528MB total capacity must be set to Normal mode when combined with either old BIOS versions or the Award BIOS.*

LBA and Large modes are new specifications which may not be fully supported by all operating systems. An example of which is the current version of UNIX System (R3.2.4) which is still unable to support the LBA function. Therefore, determine the specifications of your hard disk drive and operating system before selecting the drive's mode.

After pressing the <Enter> key on this item of the main menu, the display screen will show the following screen.

```
              ROM PCI/ISA BIOS (2A59CE1N)
                CMOS SETUP UTILITY
                AWARD SOFTWARE, INC.



 HARD DISKS         TYPE   SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE
 ─────────────────────────────────────────────────────────────────────
 Primary Master  :
 Primary Slave   :
 Secondary Master:
 Secondary Slave :
 ┌───────────────────────────────────────────────────────────────────┐
 │     Select Primary Master   Option (N=Skip) : N                    │
 │   OPTIONS      SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE          │
 │                                                                     │
 │    2(Y)       1277    619   64      0   2476     63   LBA           │
 │     1         1278   2477   16  65535  2476     63   NORMAL        │
 │     3         1277   1238   32  65535  2476     63   LARGE         │
 └───────────────────────────────────────────────────────────────────┘
   Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation
                          Esc : Skip
```

Figure 4 -7. IDE HDD Auto Detection Screen

Once the program detects the type of hard disk installed, it will display the relative information such as the type, cylinders, heads, write pre-compensation, landing zone, number of sectors per track, size and mode. A message asking you to accept the IDE HDD detected will also be flashed on the screen.

QuittingSETUP

Aftermaking all modifi cations in the SETUP program goto the option "Save & Exit SETUP" then press the <Enter>keyThe program will display the following screen.

Press<Y>to confirm the changes made, and the <N>or the <ESC>keys if further modifications are still necessary before exiting the SETUP program Once the<Y> key is pressed the system will automatically exit the program and reboot However, if you want to cancel all changes made under the SETUP program gototheoption "Exit Without Saving".

Press<Y>and the system will exit the SETUP program then reboot without saving any of the changes made.

You may also use the <F10> key to save the new settings.