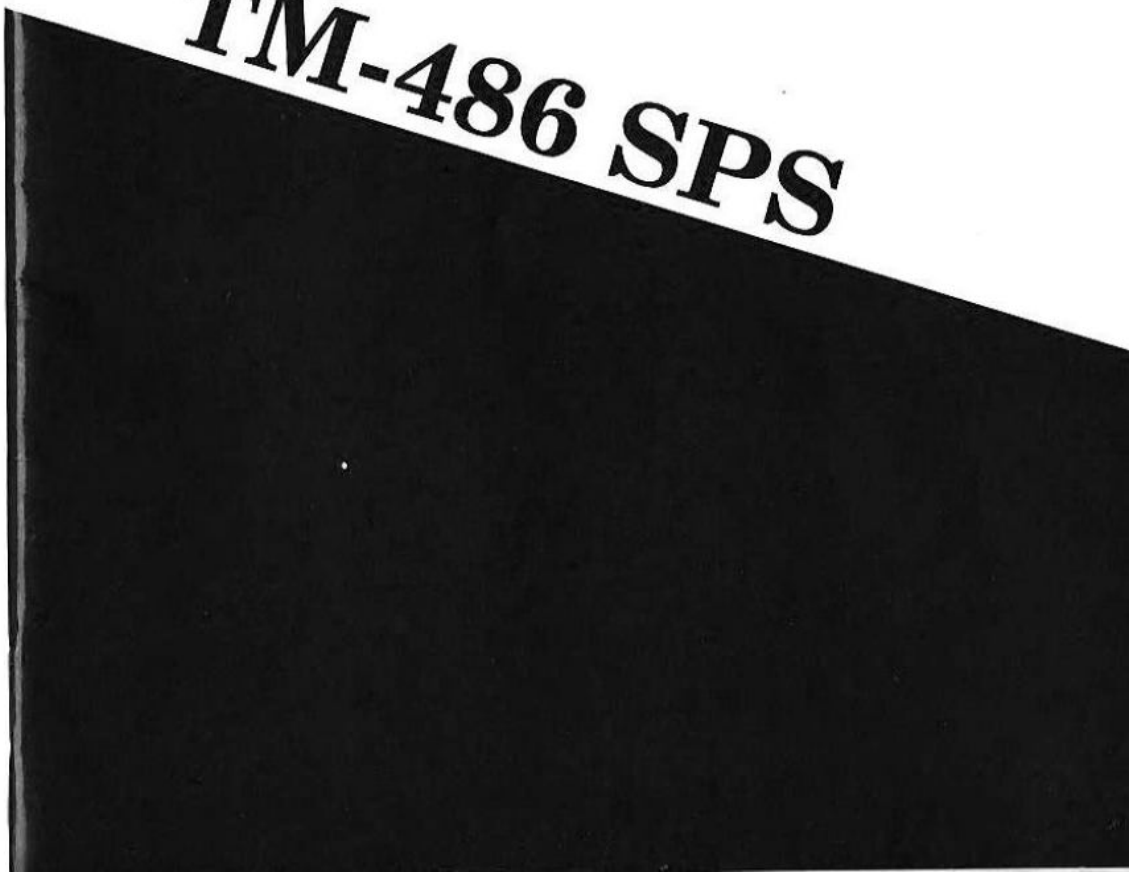
USER'S MANUAL

486 PCI ALL I/O
Plug & Play (PnP)



CONTENT

Preface

Inside the Document

This document explains how 486 SiS All I/O system board to be configured with right jumpers and values in your system. ***Package with SiS IDE driver, 2 IDE cables for 4 devices, 1 FDD cable for 2 devices, 1 COM1 cable, 1 COM2 cable, 1 Parallel cable, and 1 game cable.***

There are some basic but important hardware specifications in Chapter 1. Chapter 2 is for hardware installation. The information in Chapter 2 is about positions, jumpers and connectors. Due to the board supports full range of 486 CPU, there are many jumpers related to CPU type, speed, and voltage.

Chapter 3 is for software setup, including BIOS, IDE DRIVER and a tip to increase the performance of 486 CPU. If you want to use external I/O card, you can disable the I/O function in BIOS and then install a card on slot. You also modify the COM1 and COM2 as COM3 and COM4 in BIOS. Finally, the BIOS is PnP function. It auto detect the PCI IRQ, ISA IRQ and HDD mode.

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Trouble Shooting

We have produced thousands of PCI400 main board since July 1995. There are some comments from overseas customers that PCI400 can't be powered on, or boot from HDD or FDD, or is unstable with DX4 CPU. Herewith, we would like to suggest you the following solutions to increase the compatibility:

1) If main board can't be powered on: When main board is no function, please set J6: 3-4 short in order to clear CMOS, or "LOAD SETUP DEFAULT" from BIOS. Then you set J6: 2-3 to power on and execute normal operation. Besides, review the jumper setting for CPU brand and type on page 2-2.

2) If not boot from HDD or FDD: Please check the CPU is 5v or 3.3v. If it is a 5v CPU, please set JP28: 1-3 and/or 2-4. If it is a 3.3v CPU, please set JP28: open, page 2-3. Besides check the cache size jumpers, JP20 and JP21, are correct or not, page 2-4.

3) Unstable on DX4 CPU: You can manage DX4 with two different voltages, one is 3.3v and the other is 3.45v. If the board is not stable and CPU is DX4, you can select 3.3v or 3.45v setting. In words, if you find the fact that 3.3v setting is not stable for the system, please set the voltage at 3.45v. The related jumper is JP27. JP27: 1-2 short for 3.3v CPU, 2-3 short for 3.45v CPU, page 2-3.

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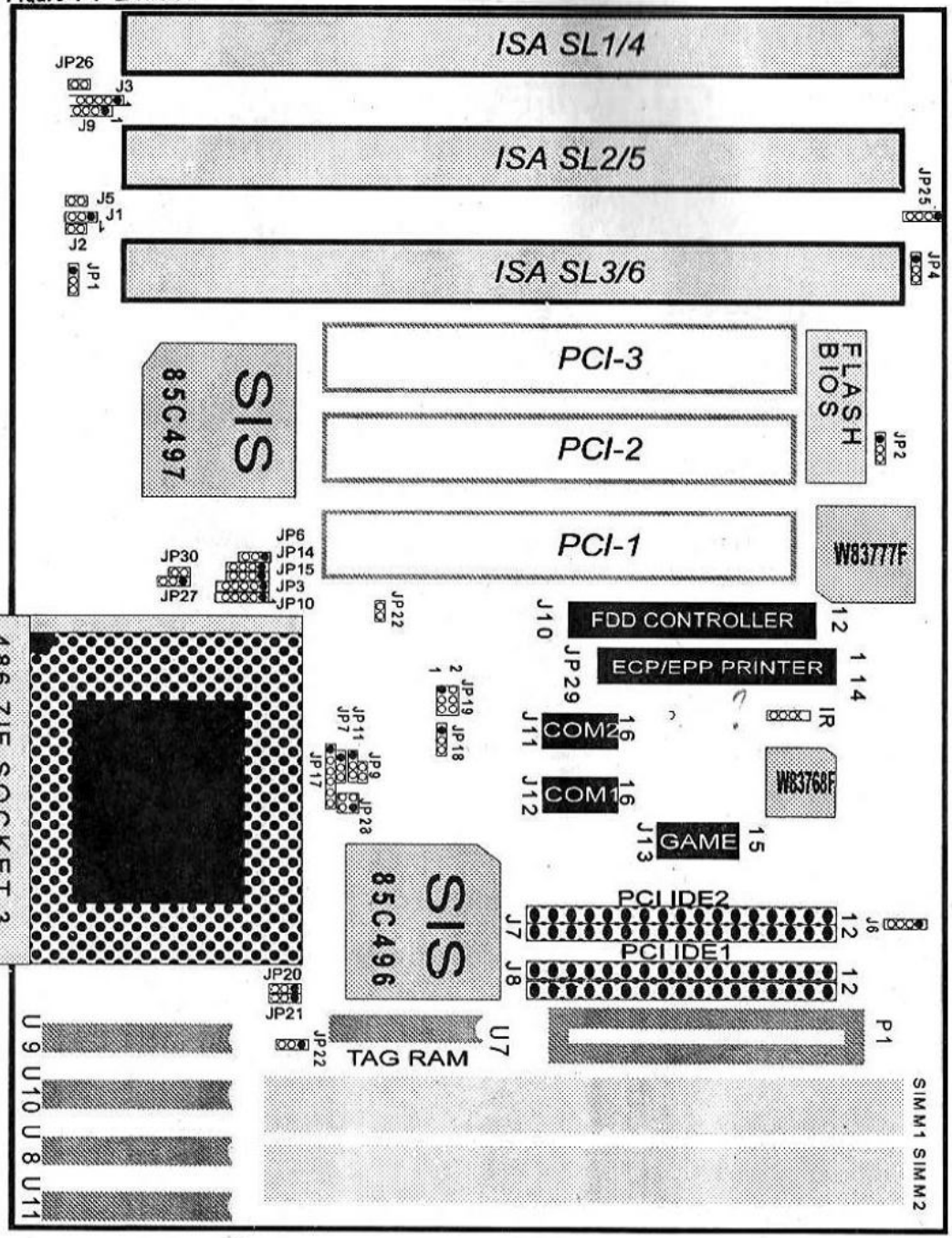
❑❑❑ Chapter 1

Introduction

✎ About This Section

❶ **PCB layout and relevant positions for SIMM, CACHE, SLOTS, and CPU.**
❷ **Features of main board.**
❸ **CPU performance test.**

Figure 1-1 LAYOUT



❑ 1.2 Features

-- CPU ZIF Socket , U5 --

- ZIF 237 pins.
- 25MHz to 120MHz.
- Intel SX, SX-SL, DX, DX-SL, DX2, DX4, P24T, P24D, 5V, 3.3V, AMD DXL, DX2, DX4, 5V, 3.45V. CYRIX S2, DX, DX2 (M6/M7),M1sc 4V, 3.6V. UMC and compatible CPU.

-- Chipsets, U2, U4, U19, U20 --

- Main board: SiS 85C496/497 PCI/ISA chipset. SiS 85C496 PCI & CPU Memory Controller (PCM). SiS85C497 AT Bus Controller & Megacell (ATM).
- Enhanced I/O: Winbond W83787F/W83768F for 1.44M FDD, or W83777F/W83768 for 2.88M FDD

-- Memory, SIMM 1-2 --

- 32-bit Memory, one SIMM, at least, on board.
- Supports two 72-pin SIMM, SIMM1 and SIMM2. Single side SIMM two banks or double side SIMM four banks.
- 1MB to 64MB SIMM, upto 128MB memory.
- Table-free DRAM configuration DRAM CAS before RAS refresh.

-- Cache, U7-11 --

- 32-bit Cache.
- Implements level-two (L2), external cache write-through or write-back design, featuring four 28/32-pin DIP SRAM sockets (U8-11), one TAG RAMs needed, U7, if the external cache is Write Back.
- External cache size is 128K, 256K, and 512K 5V cache ram. Supports L1 cache write back CPU (P24T/P24D/M7).

-- Expansion Slots, SL1-SL6, PCI1-3 --

- Builds three 16-bit ISA slots and three PCI v.2 master slots (PCI1 to PCI3).

-- Enahnced PCI IDE & ISA I/O, J7-8, J10-13, JP29 --

- Built in enhanced IDE controller.
- Supports 4 PCI IDE devices, Mode 3 and Mode 4 and CD-ROM driver. BIOS auto detects HDD mode.

- Two Serial ports with 16550, one Parallel port with ECP/EPP pocket device, bi-direction, one game port, two FDD. Through ECP/EPP, you can increase the performance of printer or connect SCSI or IDE devices
- Controlled by BIOS. Disable I/O fucntion by BIOS in order to install an I/O card. Set COM1 and COM2 as COM3 and COM4 by BIOS.
- Seven cables in package.
- Infrared port.

-- System Green BIOS, U13 --

- Flash BIOS option on board, AWARD dark green BIOS, Plug & Play, PnP function.
- Auto configuration for PCI add-on cards.
- CPU stop-clock, real zero clock for CPU
- I/O devices power saving, APM, & SMI
- Implements the EPA Energy Star PC specification with Deep Green system design.
  - Full-on: System runs in full speed CPU clock.
  - Doze: System scales-down CPU clock.
  - Standby: System scales-down the CPU clock, and turns off video display, and spin-off hard disk driver.
  - Suspend: With SMM CPU, stop CPU clock in suspend mode.

❑ 1.3 Performance Test

	SPEED 2	PM 1.7	PM 1.81	SI 7
Intel 486DX4-100	362.8	41.5	28.4	197.8
AMD 486DX4-100	336	40.6	28.4	197.8
AMD 486DX4-120	401.4	48.7	35.5	237.6
Cyrix DX4-100	330.61	39.8	28.4	170.1
Cyrix DX4-120	396.75	47.5	33.9	204.2
Cyrix M1sc-100	423.82	48.7	35.1	264.5
Cyrix M1sc-120	500.3	59.1	41.8	317.5

❑❑❑ Chapter 2

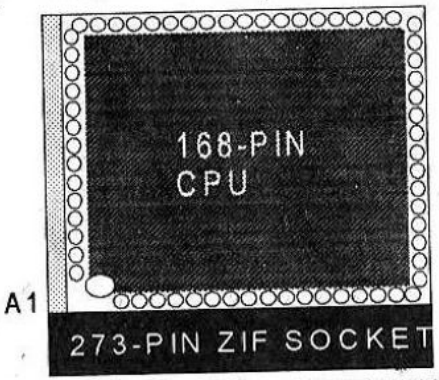
Hardware Installation

About This Section

❶ Insert the system CPU processor
❷ Set the CPU relevant jumpers to correctly configure the CPU type, CPU speed and CPU voltage.
❸ Install and configure the system level two cache memory.
❹ Install system DRAM memory.
❺ Install IDE and I/O connectors.

❑ 2.1 Install The System CPU Processor

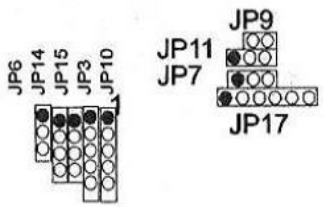
■ Install 486 CPU on the ZIF socket, U5.



- Locate the 237-pin ZIF socket, U5.
- Raise the ZIF socket retaining arm to the open position. Pin coordinates A-1 will be in the arm corner.
- Position the notched corner of microprocessor over the notched corner of the ZIF socket and align the pins of CPU over the socket.
- Carefully insert the aligned CPU into the ZIF socket and press firmly. After CPU inserted, press ZIF retaining arm downwards.
- Examine the installed CPU to ensure it is installed in the correct direction and pin aligned properly.

❑ 2.2 Set The CPU Relevant Jumpers To Correctly Configure The CPU Type, CPU Clock And CPU Voltage

FIGURE FOR CPU TYPE



•CPU Type: There are Intel, AMD, Cyrix, UMC and other compatible CPU. Essentially, make sure which type of CPU you use and set the jumpers. The following figure is to indicate the position of JUMPERs.

☞ * AMD 486DXL2-80 CPU: JP15 must 3-4 short. If not, the CPU run-in clock by 3 and speed as 120Mhz
☞ * * AMD 486DXL4-120 CPU: JP15 must 3-4 short. If not, the CPU run-in clock by 4 and other speed.

	JP6	JP14	JP15	JP3	JP10	JP9	JP11	JP7	JP17
	PERR	NMI	INIT/AM D2	SMI	HITM	CACHE	HPCL	STP	SACT
Intel DX4/Cyrix M1sc	2-3	1-2, 3-4	1-2	1-2	OPEN	OPEN	2-3	1-2	1-2
Intel DX2-66/Green	2-3	1-2, 3-4	1-2	1-2	OPEN	OPEN	2-3	1-2	1-2
Intel P24T	2-3	1-2, 3-4	OPEN	1-2	OPEN	OPEN	1-2	1-2	1-2
Intel P24D	2-3	1-2, 3-4	1-2	1-2	1-2		1-2	1-2	1-2
486DX	2-3	1-2, 3-4	OPEN	OPEN	OPEN	OPEN	2-3	OPEN	OPEN
486DX-SL/Green	2-3	1-2, 3-4	1-2	1-2	OPEN	OPEN	2-3	1-2	1-2
486SX	OPEN	2-3	OPEN	OPEN	OPEN	OPEN	2-3	OPEN	OPEN
486SX-SL/Green	1-2	2-3	1-2	1-2	OPEN	OPEN	2-3	1-2	1-2
AMD 486DXL4-120	2-3	1-2, 3-4	1-2, 3-4	4-5	4-5	OPEN	2-3	2-3	4-5
AMD 486DXL4-100	**2-3**	**1-2, 3-4**	**1-2**	**4-5** 1-2	**4-5** 1-2	**OPEN**	**2-3**	**2-3** 1-2	**4-5** 1-2
AMD 486DXL2-80	2-3	1-2, 3-4	1-2, 3-4	4-5	4-5	OPEN	2-3	2-3	4-5
Cyrix DX/DX2/DX4	1-2	1-2, 3-4	2-3	2-3	2-3	OPEN	2-3	1-2	2-3
Cyrix CX486S2	1-2	2-3	2-3	2-3	2-3	OPEN	2-3	1-2	2-3

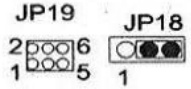
*** AMD 4886DXL4-100 IS DEFAULT SETTING**

AMD DX4-150 2-3 1-2,3-4 1-2 1-2 1-2 OPEN 2-3 1-2 1-2

- CORE CPU Speed: PCI Speed

CPU SPEED	BUS SPEED	JP19	JP18
25/50Mhz	25Mhz	1-2 short	2-3 (1)
33/66/100Mhz	**33Mhz**	**OPEN**	**2-3**
40/80/120Mhz	40Mhz	3-4, 5-6 short	1-2 or 2-3
50MHz	50Mhz	1-2 short	1-2 (1/2)

FIGURE FOR CPU FREQUENCY DEFULT SETTING

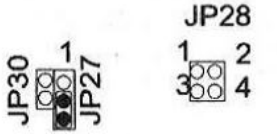


JP22: Short: 40Mhz down to 8Mhz on green mode, default. Open: 40Mhz only.

- CPU Voltage:

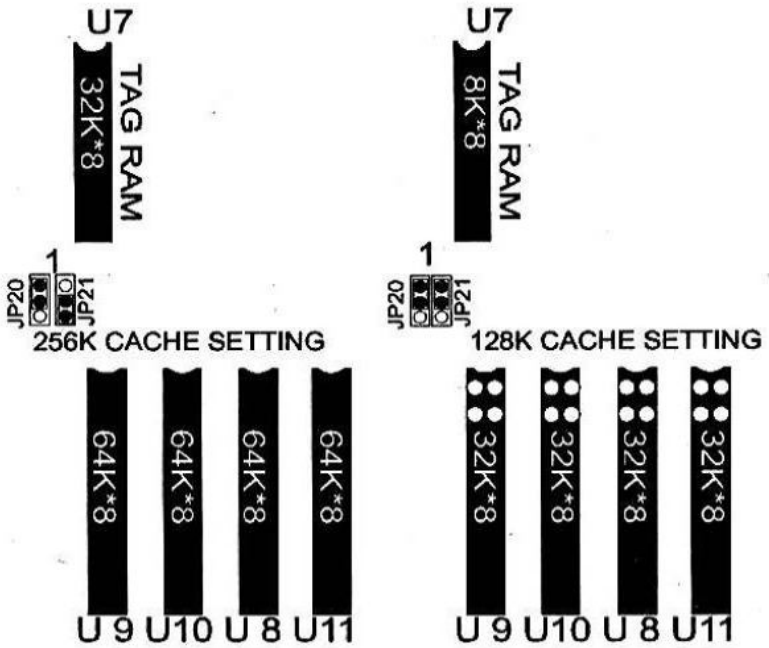
	JP27	JP30	JP28
Intel 3.3v	1-2	open	open
AMD 3.45v	**2-3**	**open**	**open**
CYRIX 3.6v	open	short	open
5v CPU	X	X	1-3, 2-4

FIGURE FOR CPU VOLTAGE DEFAULT SETTING



❑ 2.3 Install And Configure The System Level Two Cache Memory

Cache	JP20	JP21	TAG RAM/U7	CACHE RAM/U8-11
128K	1-2	1-2	8K*8	32K*8
256K	1-2	2-3	32K*8	64K*8
512K	2-3	2-3	32K*8	128K*8

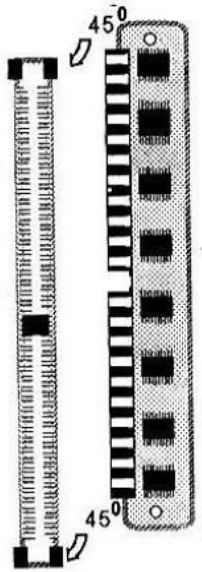


❑ 2.4 Install System DRAM Memory.

The board has 2 pcs 72-pin SIMM. You can use single or double side SIMM, upto 256MB memory. It is table-free DRAM installation. In words, you use different SIMM together. You just install one SIMM then start the system.

ONE SIMM	TWO SIMMs	TOTAL
256K * 36/32 SS	X	1MB
256K * 36/32 SS	256K * 36/32 SS	2MB
256K * 36/32 SS	1MB * 36/32 SS	5MB
512K * 36/32 DS	X	2MB
512K * 36/32 DS	512K * 36/32 DS	4MB
512K * 36/32 DS	2MB * 36/32 DS	10MB
512K * 36/32 DS	4MB * 36/32 SS	18MB
1MB * 36/32 SS	X	4MB
1MB * 36/32 SS	1MB * 36/32 SS	8MB
1MB * 36/32 SS	4MB * 36/32 SS	20MB
2MB * 36/32 DS	X	8MB
2MB * 36/32 DS	2MB * 36/32 DS	16MB

8MB * 36/32 DS	X	32MB
8MB * 36/32 DS	8MB * 36/32 DS	64MB
16MB * 36/32 SS	X	64MB
16MB * 36/32 SS	16MB * 36/32 SS	128MB
32MB * 36/32 DS	X	128MB
32MB * 36/32 DS	32MB * 36/32 DS	256MB



❑ 2.5 Install IDE , Enhanced I/O Connector and Other Jumpers

J7/J8: 4 devices PCI IDE. Supports Mode 3 and Mode 4.
J8: Primary port, device 0 and device 1.
J7: Secondary port, device 2 and device 3.

J10: 2 FDD, up to 1.44MB(W83787)/2.88MB(W83777)

J11/J12: COM1 and COM2 with 16550 function

JP29: Parallel port with ECP/EPP device to increased printer performance and connect IDE/SCSI device.

J13: Game port.

J5: RESET. When you use RESET, please press the button and hold it 1-2 second, otherwise, you have to press twice button to get RESET function.

Battery Supply Type:

	J6	JP25
On board LI battery	2-3 (DEFAULT)	1-2
External battery	OPEN (external battery connector)	1-2
Clear CMOS Data	3-4	X
Reset RTC	X	2-3

Flash BIOS Mode

	JP4
Read Only Mode	2-3, Non upgradeable
Write Mode	1-2, Upgradeable

To safe your FLASH BIOS, we set the default position at 2-3 read only. As soon as you need to upgrade the BIOS, you set 1-2.

JP18: PCI Speed Selection
2-3: Same CPU speed for CPU 25/33MHz (DEFAULT)
1-2: 1/2 CPU speed for CPU 40/50MHz

❑ 2.6 I/O Address and IRQ/DRQ

I/O Address and IRQ

On Board I/O	Address	IRQ	DRQ
GAME	200-20F	X	X
COM1	3F8-3FF	4	X
COM2	2F8-2FF	3	X
COM3	3E8-3EF	3	X
COM4	2E8-2EF	3	X
IDE1	1F0-1F7	14	X
IDE2	170-177	15	X
LPT1	378-37F	7	3 (ECP)
LPT2	278-27F	7	3 (ECP)
LPT3	3BC-3BF	7	3 (ECP)
FDD1	3F0-3F7	6	2

❑ 2.7 Jumper List

JP	DESCRIPTION
J1	2-3 on: turbo, 2-3 off: low speed, pin#1: vcc, pin#2:turbo , pin#3: gnd
J2	Turbo LED, pin#1: LED +, pin#2: LED-
J3	KeyLock, pin#1: power LED+, pin#2: NC, pin#3: power LDC-, pin#4: keylock, pin#5: gnd
J4	Keyboard connector
J5	Reset
J6	3-4 to clear COMS, OPEN for externall battery connector
J7	Secondary PCI IDE port, IDE 2 and IDE 3
J8	Primary PCI IDE port, IDE 0 and IDE1
J9	Speaker connector
J10	FDD connector
J11	COM 2 with 16550 function
J12	COM 1 with 16550 function
J13	Game port
P1	Power connector
JP3	CPU SMI signal
JP4	Flash BIOS controller, 1-2: writeable, 2-3: read only
JP6	CPU PERR signal
JP7	CPU STP signal
JP9	CPU CACHE signal
JP10	CPU HITM signal
JP11	CPU HPCD signal
JP15	CPU INIT/AD2 CPU DX4/DX2

JP15	CPU INIT/AD2 CPU DX4/DX2
JP17	CPU SMI ACT signal
JP18	PCI speed selection, 2-3: same CPU speed for 25/33MHz, 1-2: 1/2 CPU speed for CPU 40/50MHz
JP19	CPU clock generator frequency selection
JP20	TAG HA18 selection. 1-2 for 128/256K cache, 2-3 for 256K cache
JP21	TAG HA 17 selection 1-2 for 128/256K cache, 2-3 for 256K cache
JP22	Short: 40Mhz down to 8Mhz on green mode, default, Open: only 40Mhz
JP25	RTC reset, 1-2: NORMAL, 2-3: RTC reset
JP26	On board IDE port active LED
JP27	3.3/3.45v selection. 1-2: 3.3v, 2-3: 3.45v, open for 4v
JP28	5v CPU, 1-3 and 2-4 short for 5v CPU, open for 4v
JP29	ECP/EPP bi-direction Parallel port
JP30	3.6v CPU selection, short for 3.6v

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❑❑❑ Chapter 3

PCI IDE AND AWARD, PnP GREEN BIOS SETUP

✎ About This Section

❶ **PCI IDE installation**
❷ **PnP BIOS setup**
❸ **A secret to increase the performance for 486 CPU.**

❑ 3.1 Install PCI IDE

1. Disable the <IDE BLOCK> from BIOS setup. Remove SMARTDRV. EXE and EMM386.EXE from CONFIG. SYS will get better performance.

2. Run Install.EXE to install DOS, WINDOWS, WFW and Netware drivers.

3. To install WIN NT...
   1) From the Options menu in "Windows NT Setup", choose "Add/Remove SCSI Adapters."
   2) In the SCSI Adapter Setup dialog box, choose the "Add" button
   3) In the "Adapter:" list dialog box, choose " Other (requires a disk from a hardware manufacturer)"

4) Next, you will see the " Insert Diskette" dialog box, insert the SiS driver disk into Drive A: and type "A:WINNT" into dialog box.
5) Next, in "Select OEM Option"dislog box, choose " SiS 32-bit Local Bus IDE Adapter" and click "OK".
6) In the "Select SCSI Adapter Option" dialog box, click on the "install" button in the dialog box.
7) Installation is a successful if the "SCSI Adaptecr Setup" dialog box re-appear, and "SiS 32-bit Local Bus IDE Adapter" will be listed as an installed driver.
8) REboot your system.

4. To install OS/2...
1) From the OS/2 desktop, open OS/2 system.
2) Open system Setup.
3) Select device driver install.
4) Put the driver floppy disk in A:
5) Select install.
6) Select OK.

5. To set wait state manually, notice that:
- For 496 B3Chip:

DISK MODE	4	3	2	1	0
WAIT STATE	0	1	3	5	7

a. Installation utility problem from ECS.
b. Second channel wait state.
c. CD-ROM access for DOS and WINDOWS.
d. Floppy access in WINDOWS
e. Mode 4 HDD performance (greater than 12K in cretest).
f. README.NOW file for B3 496 chip.

6 IDE performance tests WITH DRIVER:

BRAND	CONNER	FUJI
PART #	CFS850A	M2684TAU
MODE	4	3
WAIT STATE	0	1
CORE TEST 2.7	10,817.6KB/SEC 12.2ms/SEEK	9,812.1KB/SEC 11.6ms/SEEK
CORE TEST 2.9	10,976.5KB/SEC	9,886.2KB/SEC
SI 7	9.9	13.8
PCTOOLS V.9	35	28.1
BYTE V2.1	19.04/AT 11.08/386	19.39/AT 11.28/386

❑ 3.2 BIOS Setup

ROM PCI/ISA BIOS (2A41BT41)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PCI CONFIGURATION SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	PASSWORD SETTING IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
Esc : Quit F10 : Save & Exit Setup	Arrow: Select Item (Shift) F2: Change Color
Time, Date, Hard Disk Type.....	

ROM PCI/ISA BIOS (2A41BT41)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Jan 5 2000
Time (hh:mm:ss) : 0 : 0 : 0

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZ	SECTOR	MODE
Primary Master:	NONE	0	0	0	0	0	0	--------
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: 1.2M, 5.25 in
Drive B: None

Video: EGA/VGA

Halt On: All Errors

Base Memory:	640K
Extended Memory:	3072K
Other Memory:	384K
Total Memory:	4096K

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

ROM PCI/ISA BIOS (2A41BT41)
BIOS FEATURES UTILITY
AWARD SOFTWARE, INC.

Virus Warning	: Disable
CPU Internal Cache	: Enabled
External Cache	: External
Quick Power On Self Test	: Disable
Boot Sequence	: A,C
Swap Floppy Drive	: Disable
Boot Up Floppy Seek	: Enabled
Boot Up NumLock Status	: On
Boot Up System Speed	: High
Gate A20 Option	: Fast
Typematic Rate Setting	: Disabled
Typematic Rate (Chars/Sec)	: 6
Typematic Delay *Msec)	: 250
Security Option	: Setup

Video BIOS Shadow	: Enabled
C8000-CBFFF Shadow	: Disabled
D0000-D7FFF Shadow	: Disabled
D8000-DFFFF Shadow	: Disabled

Select Item
F1 : Help
F5 : Old Values
F6: Load BIOS Defaults
F7 : Load Setup Defaults
PU/PD/+/- : Modify
(Shift)F2 : Color

ROM PCI/ISA BIOS (2A41BT41)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enable
ISA Bus Clock	: 1/4 PCLK
LBD# Sample Point	: End of T2
Cache Write Cycle	: 2 CLK
Cache Burst Read Cycle	: 1 CLK
L2 Cache/DRAM Cycle WS	: 2 CLK
DRAM RAS to CAS Delay	: 2 CLK 3 CCLK
DRAM Write Cycle	: 0 WS 1 WS
DRAM Write CAS Pulse	: 1 CLK 2 CCLK
DRAM CAS Precharge Time	: 1 CLK
DRAM RAS to MA Delay	: 1 CLK
DRAM SPEED	: FASTER
CPU Burst Write	: Disable
L2 Cache Policy	:Write Back
L2 Cache Tag Bits	: 8 Bits

Onboard FDD Controller	: Enabled
Onboard Serial Port 1	: COM 1
Onboard Serial Port 2	: COM 2
Onboard Parallel Port	: 378H
Onboard Parallel Mode	: EPP/SPP
Onboard Game Port	: Enabled
Serial Port 1 MIDI	: Disabled
Serial Port 2 MIDI	: Disabled

Arrorow: Select Item
F1 : Help
F5 : Old Values
F6: Load BIOS Defaults
F7 : Load Setup Defaults
PU/PD/+/- : Modify
(Shift)F2 : Color

Write Through

ROM PCI/ISA BIOS (2A41BT41)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Max Saving
PM Control by APM	: Yes
Video Off Option	: Susp, Stby -> Off
Video Off Method	: V/H SYNC+Blank
Suspend Switch	: Enable
Clock Down by SMOUT	. 0
** PM Timers **	
HDD Power Down	: Disable
Doze Mode	: 10Sec
Standby Mode	: 10Sec
Suspend Mode	: 10Sec
** PM Events **	
PCI master Activity	: Enable
COM Ports Activity	: Enable
HDD Ports Activity	: Enable
DMA Ports Activity	: Enable
VGA Activity	: Disable
IRQ3 (COM2)	: Enable

IRQ4 (COM1)	: Enable
IRQ5 (LPT2)	: Enable
IRQ6 (Floppy Disk)	: Enable
IRQ7 (LPT1)	: Enable
IRQ8 (RTC Alarm)	: Enable
IRQ9 (IRQ2 Redir)	: Disable
IRQ10 (Reserved)	: Enable
IRQ11 (Reserved)	: Enable
IRQ12 (PS/2 Mouse)	: Enable
IRQ13 (Coprocessor)	: Enable
IRQ14 (Hard Disk)	: Enable
IRQ15 (Reserved)	: Enable

Arrorow: Select Item
F1 : Help
F5 : Old Values
F6: Load BIOS Defaults
F7 : Load Setup Defaults
PU/PD/+/- : Modify
(Shift)F2 : Color

ROM PCI/ISA BIOS (2A41BT41)
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

Slot 1 Using INT#	: AUTO	Onboard 496B IDE Port	: Enable
Slot 2 Using INT#	: AUTO	IDE 0 Master Mode	: Auto
Slot 3 Using INT#	: AUTO	IDE 0 Slave Mode	: Auto
Slot 4 Using INT#	: AUTO	IDE 1 Master Mode	: Auto
		IDE 1 Slave Mode	: Auto
1st Available IRQ	: 9	IDE Prefetch Read Buffer	: Enable
2nd Available IRQ	: 10	IDE HDD Block Mode	: Enable
3rd Available IRQ	: 11		
4th Available IRQ	: 12		
PCI IRQ Actived By	: Edge		
PCI IDE IRQ Map To	: PCI-Auto		
Primary IDE INT#	: A		
Secondary IDE INT#	: B		
		Arrorow: Select Item	
CPU->PCI Mem Post Write Buf	: Disable	F1 : Help	PU/PD/+/- : Modify
CPU->PCI Memory Burst Write	: Disable	F5 : Old Values	(Shift)F2 : Color
PCI Master Burst Read/Write	: Disable	F6: Load BIOS Defaults	
		F7 : Load Setup Defaults	

❑ 3.3 Increasing The Performance For 486 CPU

The default setting in BIOS is stable and without any compatible problems working with any brands DRAM SIMM.

If the timing of DRAM can match the requirments of BIOS, you can enjoy the ultras high speed and unbeaten system performance when you use 486 CPU. First, please DISABLE the Auto-configuration in BIOS and then set the values in chipset setup table as follows:

Cache Write Cycle	: 2 CLK
Cache Burst Read Cycle	: 1 CLK
L2 Cache/DRAM Cycle WS	: 2 CLK
DRAM RAS to CAS Delay	: 2 CLK
DRAM Write Cycle	: 0 WS
DRAM Write CAS Pulse	: 1 CLK
DRAM CAS Precharge Time	: 1 CLK
DRAM RAS to MA Delay	: 1 CLK
DRAM Speed	: FASTER
CPU Burst Write	: Enable
L2 Cache Policy	:Write Back
L2 Cache Tag Bits	: 7 Bits

For example, the performance of Intel 486DX2-66 under BIOS default values with BYTE v2.1: 11.38(AT), 4.21 (386). However if you set the optimal values as above the performance is 14.91 (AT), 5.83 (386). 30-40% performance increased.

❑ 3.4 AWARD BIOS Post Code

POST	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 inorder 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	Cyrix CPU initialization Chche 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 Slts 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	

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ROM PCI/ISA BIOS (2A41BT41)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed, Jan 5 2000
Time (hh:mm:ss) : 0 : 0 : 0

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZ	SECTOR	MODE
Primary Master:	NONE	0	0	0	0	0	0	--------
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: 1.2M, 5.25 in
Drive B: None

Video: EGA/VGA

Halt On: All Errors

Base Memory:	640K
Extended Memory:	3072K
Other Memory:	384K
Total Memory:	4096K

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

DRAM Write Cycle : 0 WS
DRAM Write CAS Pulse : 1 CLK
DRAM CAS Precharge Time : 1 CLK

DRAM RAS to MA Delay : 1 CLK
DRAM SPEED : FASTER
CPU Burst Write : Disable
L2 Cache Policy :Write Back
L2 Cache Tag Bits : 8 Bits

Arrorow: Select Item
F1 : Help
F5 : Old Values
F6: Load BIOS Defaults
F7 : Load Setup Defaults
PU/PD/+/- : Modify
(Shift)F2 : Color