

# **PSC-586**

## **ISA/PCI Pentium™**

### **Single Board Computer**

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# 1

## Introduction

Welcome to the PSC-586 ISA/PCI Pentium Single Board Computer. The PSC-586 board is an ISA, PCI, and PC/104 form factor board, which comes equipped with high performance Intel Pentium CPU and advanced high-performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

An advanced high performance super AT I/O chip SMC FDC37C665 is used in the PSC-586 board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT and XT architecture's, as well as EPP and ECP. The FDC37C665 incorporates sophisticated power control circuitry(PCC). The PCC supports multiple low power down modes.

The most outstanding feature in the PSC-586 is built-in PCI expansion bus. Based on the PCI bus, you could easily install 4 master 32-bit PCI add-on cards on backplane.

PSC-586 uses the ALI chipset, M1449 and M1451, which are 100% ISA/PCI compatible chipset.

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## 1.1 Specifications :

The PSC-586 ISA/PCI Pentium Single Board Computer provides the following specification:

.. **System :**

- **CPU :** Intel Pentium P54C/P54CT 75/90/100/120/133/150
- **Bus Interface :** ISA ( PC/AT) bus and PCI 32-bit local bus
- **Data bus :** 32-bit
- **DMA channels :** 7
- **Interrupt levels :** 15
- **Real-time clock/calendar :** DS-12887 chip and quartz oscillator, 128B CMOS memory, powered by lithium battery for over 10 years of data retention.

.. **Memory :**

- **RAM memory :** 2MB to 128MB
- **Second Cache memory :** 256KB,512KB or 1MB

.. **Input/Output :**

- **IDE hard disk drive interface :** Supports up to two IDE hard disk drives. Can be disabled by BIOS Setup.
- **Floppy disk drive interface :** Supports two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives. Can be disabled by BIOS Setup.
- **Two high speed Series ports :** NS16C550 compatible UARTs with send/receive 16-byte FIFOs, data rates are independently programmable from 115.2K baud down to 50 baud. Modem control circuitry.

Connector : Two D-sub 9-pin on rear side and two 10-pin heard on

board.

IRQ selection : COM1 - IRQ4 or IRQ12; COM2 - IRQ3 or IRQ11.

- PS/2 Mouse Port on board and using the IRQ12.

- **Multi-mode Parallel Port :**

Standard mode - IBM PC/XT, PC/AT, PS/2 compatible bi-directional parallel port.

Enhanced mode - Enhanced parallel port ( EPP) compatible with IEEE 1284 specification.

High speed mode - Microsoft and Hewlett Packard extended capabilities port ( ECP), compatible with IEEE 1248 specification.

Incorporates ChiProtect circuitry for protection against damage due to printer power-on.

IRQ selection - IRQ7 or IRQ5.

Data Request ( DRQ) - DRQ3 or DRQ1.

- **Industrial features :**

- **Watch-dog timer :** can be set by 1,2,10,20,110,or 220 seconds period. Reset or NMI was generated when CPU did not periodically trigger the timer. Your program use hex 043 and 443 to control the watch-dog and generate a system reset.
- **PC/104 expansion bus :** A 64-pin and 40-pin, industrial embedded-PC bus standard.
- **External power connector :** 8-pin male connector ( Molex 6410 series compatible)
- **Keyboard connector :** A 5-pin header on board and 6-pin mini-DIN keyboard connector is located on the mounting bracket.

- **General :**

- **Power Consumption :** +5V @ 2.5A ( 486DX-40, 4MB RAM)  
±12V @ 20mA ( for RS-232 only)
- **Operating Temperature :** 0° ~ 60° C ( CPU needs Cooler)
- **Humidity :** 5% ~ 95%, non-condense





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## 1.2 What You Have

In addition to this *User's Manual*, the PSC-586 package includes the following items:

- PSC-586 ISA/PCI Pentium Single Board Computer
- Printer Cable
- FDD/HDD Cable
- 6-pin Mini-Din to 5-pin Din Keyboard Adapter Cable

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

# 2

## Installation

This chapter describes how to install the PSC-586. At first, the layout of PSC-586 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the PSC-586's configuration, such as CPU type selection, system clock setting, and interrupt IRQ setting for serial ports and parallel port, are also included.

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### 2.1 PSC-586's Layout

< reference next page >



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## 2.2 Unpacking

Your PSC-586 Single Board Computer contains sensitive electronic components that can be easily damaged by static electricity.

In this section, we describe the precautions you should take while unpacking, as well as during installation. It is very important that the instructions be followed correctly, to avoid static damage, and to successfully install the board.

The system board should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the cardboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before processing.

After opening the cardboard carton, exact the system board and place it only on a grounded anti-static surface component side up.

Again inspect the board for damage. Press down on all the socketed IC's to make sure that they are properly seated. Do this only with the board place on a firm flat surface.

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**Note : DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.**

---

You are now ready to install your PSC-586 Single Board Computer.

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## 2.3 Jumper Description

You can change the PSC-586's configuration by setting jumper switches on the board. The board's jumpers are preset at the factory. Under normal circumstances, you should not need to change the jumper settings.

A jumper switch is **closed** (sometimes referred to as shorted with the plastic cap inserted over two pins of the jumper). A jumper is **open** with the plastic cap inserted over one or no pin(s) of the jumper. Figure 2.2 below shows different jumper settings which will be used in this chapter.

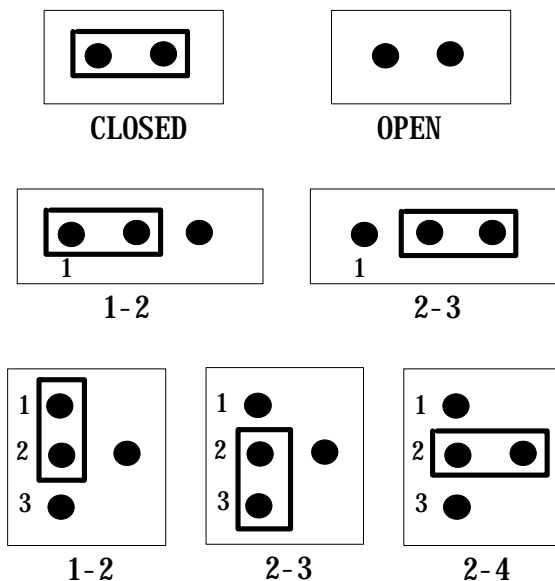


Figure 2.2

The following table lists the connectors on the PSC-586, please refer Section 2.1 "PSC-586's Layout" for help locating the jumpers.



---

## 2.4 Install the CPU

When you install the Pentium CPU, you only have to care the using CPU's speed. Based on the CPU speed to set the correct jumpers.

CPU Speed	JP7 1-2	JP7 3-4	input clock to CPU	JP20	JP6	Freq. Multiply
75MHz	OPEN	OPEN	50MHz	OPEN	OPEN	x 1.5
<b>*90MHz</b>	<b>OPEN</b>	<b>CLOSE</b>	<b>60MHz</b>	<b>OPEN</b>	<b>OPEN</b>	<b>x 1.5</b>
100MHz	CLOSE	CLOSE	66MHz	OPEN	OPEN	x 1.5
120MHz	OPEN	CLOSE	60MHz	OPEN	CLOSE	x 2
133MHz	CLOSE	CLOSE	66MHz	OPEN	CLOSE	x 2
150MHz	OPEN	OPEN	50MHz	CLOSE	OPEN	x 3

(\*) default setting

Note : If customer want to use Cyrix M1 CPU in the future, please set the JP4 and JP5 to CLOSE. The two jumpers are reserved for the M1 CPU.

Pentium CPU : JP4/JP5 - OPEN  
Cyrix M1 : JP4/JP5 - CLOSE

### • JP8 : CPU Voltage Selection

JP8	CPU Voltage
* 1-2	3.3V
2-3	3.6V

(\*) default setting

---

## 2.5 External Cache Memory

The external cache size can be selected by JP2 and JP3. The Tag RAM is fixed 32Kx8 type. The Data SRAM could be 32Kx8, 64Kx8, or 128Kx8 type. When change different Data SRAM type have to change 8pcs for U1-U4 and U7-10.

Cache Size	SRAM Type	JP2	JP3
<b>*256KB</b>	<b>32Kx8</b>	<b>1-2</b>	<b>1-2</b>
512KB	64Kx8	2-3	1-2
1MB	128Kx8	2-3	2-3

(\*) default setting

---

## 2.6 System Memory DRAM

The system DRAM on board is divided into two banks, Bank 0, and 1. Each bank has two 72-pin SIMM sockets to accept 1MB,2MB,4MB,8MB,16MB,or 32MB RAM module.You can only install Bank 0 or Bank1. So, there are many different combination of memory configuration from 2MB to 128 MB.

**Bank 0 - SIMM 2 and 4**

**Bank 1 - SIMM 1 and 3**

DRAM SIZE	Bank 0	Bank 1
2MB	1MB x 2pcs	-
2MB	-	1MB x 2pcs
4MB	1MB x 2pcs	1MB x 2pcs
4MB	2MB x 2pcs	-
6MB	1MB x 2pcs	2MB x 2pcs
:	:	:
:	:	:
64MB	16MB x 2pcs	16MB x 2pcs
96MB	32MB x 2pcs	16MB x 2pcs
128MB	32MB x 2pcs	32MB x 2pcs

To get higher operation speed performance,user could set the JP1 to make no delay address strobe.

### • JP1 : Address Strobe Delay Selection

JP1	Description
1-2	No Delay ADS#
<b>*2-3</b>	<b>Delay ADS#</b>

(\*) default setting



---

## 2.7 Watch-Dog Timer

The Watch-Dog Timer is enabled by reading port 443H. It should be triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again, or activate NMI to CPU. The Watch-Dog Timer is disabled by reading port 043H. See Appendix C for more detailed description of Watch-Dog Timer.

The Watch-Dog Timer time-out period can be set 1,2,10,20,110, and 220 sec. by jumper JP19.

### • JP18 : Watch-Dog Active Type Setting

JP18	DESCRIPTION
*1-2	RESET WHEN WDT TIME-OUT
2-3	ACTIVATE NMI WHEN WDT TIME-OUT
OPEN	DISABLE WDT

(\*): default setting

### • JP19 : WDT TIME-OUT PERIOD

Period	1-2	3-4	5-6	7-8
1 sec	OPEN	OPEN	CLOSE	OPEN
2 sec	OPEN	OPEN	CLOSE	CLOSE
*10 sec	OPEN	CLOSE	OPEN	OPEN
20 sec	OPEN	CLOSE	OPEN	CLOSE
110 sec	CLOSE	OPEN	OPEN	OPEN
220 sec	CLOSE	OPEN	OPEN	CLOSE

(\*) : default setting

---

## 2.8 Parallel Port Interface

The on-board parallel port is CN9 ( refer to Chapter 3 for details). This port can be set I/O address to 378H~37FH, 278H~27FH, 3BCH~3BEH

or Disabled by BIOS setup. Also, the port's interrupt can be set to IRQ7 or IRQ5 by jumper JP12, set Data Request Selection by JP14, and set Data Acknowledge for ECP mode by JP15.

The PSC-586 allows installation of up to three different I/O ports. These three ports are called: LPT1, LPT2, and LPT3. The printer port on the Monochrome/Printer Adapter that is addressed at 3BCH~3BEH will be LPT1 when it is installed. Then the port's address 378H~37FH will be LPT2, and 278H~27FH will be LPT3. If the Monochrome/Printer Adapter is used instead of Color/Graphic Adapter, then the 378H~37FH will be LPT1, and 278H~27FH will be LPT2. All the setting for the parallel port is done by BIOS Setup program, please refer to Chapter 4 for more details.

• **JP12 : Parallel Port Interrupt Setting**

<b>JP12</b>	<b>DESCRIPTION</b>
* 1-2	<b>IRQ7</b>
2-3	IRQ5

(\*) : default setting

• **JP14 : Parallel Port Data Request Setting**

<b>JP14</b>	<b>DESCRIPTION</b>
1-2	DRQ1
(*) 2-3	<b>DRQ3</b>

(\*) : default setting

• **JP15 : Parallel Data Acknowledge for ECP Mode**

<b>JP15</b>	<b>DESCRIPTION</b>
1-2	DACK1
(*) 2-3	<b>DACK3</b>

\* : default setting

---

## 2.9 Serial Port Interface

There are two on-board RS-232 serial ports interface, CN12/13( ACE0) and CN15/16(ACE1). The serial ports can be configured as COM1, COM2, COM3, COM4, or Disabled by BIOS setup. The interrupt of these ports can be set by jumper JP13 and JP11.

• **JP13 : COM1 Interrupt Setting**

JP13	COM1
* 1-2	IRQ4
2-3	IRQ12

(\*) : default setting

• **JP11 : COM2 Interrupt Setting**

JP11	COM2
* 1-2	IRQ3
2-3	IRQ11

(\*) : default setting

## 2.10 Floppy Disk Controller

There are two jumpers JP9 and JP10 to control the data rate outputs and Media ID function. The Media ID is only used for Enhanced Floppy Mode of OS2.

• **JP9 : Data Rate Outputs**

JP9	Description
1-2	Media IN
2-3	Data Rate Out
*Open	Driver Type

(\*) : default setting

• **JP10 : Media ID**

JP10	Description
CLOSE	Enable
* OPEN	Disable

(\*) : default setting

---

## 2.11 FDC37C665 Multi-I/O Chipset

The PSC-586 comes equipped with super multi-I/O chipset SMC FDC37C665, you can select JP16 to enable or disable the FDC37C665.

### • JP16 : Multi-I/O FDC37C665/666 Setting

JP16	DESCRIPTION
* OPEN	ENABLE FDC37C665
CLOSE	DISABLE FDC37C665

(\*) : default setting

---

## 2.12 PS/2 Mouse Setting

The PSC-586 comes equipped with PS/2 Mouse function to release RS-232 port for other application.

### • JP17 : PS/2 Mouse IRQ Setting

JP17	DESCRIPTION
* CLOSE	IRQ 12
OPEN	reserved

(\*) : default setting

# 3

## Connection

This chapter describes how to connect peripherals, switches and indicators to the PSC-586 board.

### 3.1 Floppy Disk Drive Connector

PSC-586 board comes equipped with a 34-pin daisy-chain driver connector cable.

#### • CN8 : FDC CONNECTOR

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE CURRENT#
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

---

## 3.2 IDE Disk Drive Connector

You can attach two IDE( Integrated Device Electronics) hard disk drives to the PSC-586 internal controller. The board comes equipped with a 40-pin flat-cable connector.

### • CN7: IDE Interface Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

---

## 3.3 Parallel Port

This port is usually connected to a printer, The PSC-586 includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN9. The detailed pin assignment of the connector is specified as following table:

### • CN9 : Parallel Port Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6

9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	IOW#	24	GROUND
25	GROUND		

---

### 3.4 Serial Ports

The PSC-586 offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports. These ports let you connect to serial devices or a communication network. Two DB-9/10-pin Header connectors are provided by the PSC-586.

- **CN13/16 : ACE0 & ACE1 D-Sub 9-pin**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

- **CN12/15 : ACE0 & ACE1 Header 10-pin**

Pin No.	Description	Pin No.	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	NC

---

### 3.5 Keyboard Connector

The PSC-586 provides two keyboard connectors. A 5-pin header connector CN10 supports passive backplane applications. Another one is a 6-pin Mini-DIN connector CN17 on the board mounting bracket for single board computer applications. The detailed pin assignment of the connector is specified as following table:

• **CN10 : 5-pin Header Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GROUND
5	+5V

• **CN17 : 6-pin Mini-DIN Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	N/C
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	N/C

---

### 3.6 External Switches and Indicators

There are many external switches and indicators for monitoring and controlling your CPU board. These features are completely optional install them if you need them. The detailed pin assignment of the connectors is specified as following table:

• **CN5 : RESET BUTTON**

PIN NO.	DESCRIPTION
1	EXTERNAL RESET
2	GROUND

• **CN1 : POWER LED & KEYLOCK**



PIN NO.	DESCRIPTION
1	POWER LED ANODE
2	KEY
3	GROUND
4	KEYLOCK
5	GROUND

• **CN6 : IDE LED connector**

PIN-NO	DESCRIPTION
1	+5V
2	HDD ACTIVE#

---

### 3.7 External Power Connector

The PSC-586 has an on-board external power connector CN11. You can connect power directly to the CPU board for some single-board-computer( without passive backplane) application. The detailed pin assignment of the connector is specified as following table:

· **CN11 : EXTERNAL POWER CONNECTOR**

PIN NO.	DESCRIPTION
1	+5V
2	+12V
3	-12V
4	GROUND
5	GROUND
6	-5V
7	+12V
8	+5V

---

### 3.8 External Speaker

The PSC-586 has its own buzzer, you also can connect to the external speaker through the connector CN4. The detailed pin assignment of the connector is specified as following table:

• **CN4 : SPEAKER**

PIN NO.	DESCRIPTION
---------	-------------

1	SPEAKER SIGNAL
2	NC
3	GROUND
4	+5V

---

### 3.9 PS/2 Mouse 6-pin Mini DIN Connector

- **CN14 : PS/2 Mouse Connector**

PIN NO.	DESCRIPTION
1	MSDATA
2	NC
3	GROUND
4	+5V
5	Mouse Clock
6	NC

---

### 3.10 PC/104 Connection Bus

The PSC-586's PC/104 expansion bus let you attach any kind of PC/104 modules. The PC/104 bus is already become the industrial embedded PC bus standard, so you could easily install over thousands of PC/104 modules from hundreds of venders in the world. The detailed pin assignment of the PC/104 expansion bus connectors CN10 and CN11 are specified as following tables:

*Note : The PC/104 connector allows to directly plug-in Stack-thru PC/104 modules. Don't need the PC/104 mounting kit.*

- **CN18 & CN19 : PC/104 Expansion Bus**  
 ( CN18 = 64-pin female connector;  
 CN19 = 40-pin female connector.)

<b>Pin NO.</b>	<b>J1 / P1 Row A</b>	<b>J1 / P1 Row B</b>	<b>J2 / P2 Row C</b>	<b>J2 / P2 Row D</b>
0	--	--	0V	0V
1	IOCHECK*		SBHE*	MEMSC16*
2	SD7	0V		
3	SD6	RESETDRV	LA23	IOSC16*
4	SD5	+5V	LA22	IRQ10
5	SD4	IRQ9	LA21	IRQ11
6	SD3	-5V	LA20	IRQ12
7	SD2	DRQ2	LA19	IRQ15
8	SD1	-12V	LA18	IRQ14
9	SD0	NEWS*	LA17	DACK0*
10	IOCHRDY	+12V	MEMR*	DRQ0
11	AEN	(KEY)	MEMW*	DACK5*
12	AS19	SMEMW*	SD8	DRQ5
13	SA18	SMEMR*	SD9	DACK6*
14	SA17	IOW*	SD10	DRQ6
15	SA16	IOR*	SD11	DACK7*
16	SA15	DACK3*	SD12	DRQ7
17	SA14	DRQ3	SD13	+5V
18	SA13	DACK1*	SD14	MASTER*
19	SA12	DRQ1	SD15	0V
20	SA11	REFRESH*	(KEY)	0V
21	AS10	SA11	SYCLK	--
22	SA9	IRQ7		--
23	SA8	IRQ6	--	--
24	SA7	IRQ5	--	--
25	SA6	IRQ4	--	--
26	SA5	IRQ3	--	--
27	SA4	DACK2*	--	--
28	SA3	TC	--	--
29	SA2	BALE	--	--
30	SA1	+5V	--	--
31	SA0	OSC	--	--
32	0V	0V	--	--

**NOTES:**

1. Rows C and D are not used on 8-bit modules.
2. P2 has two connector options with differing physical pinout orientation.
3. B10 and C19 are key locations.
4. Signal timing and function are as specified in p996.
5. Signal source/sink current differ from P996 values.

# 4

## AWARD BIOS Setup

The PSC-586 uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options which may be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

---

### 4.1 Getting Start

When powered on the system, the BIOS will enter the Power-On-Self-Test routines. These routines will be executed for System Test and Initialization and System Configuration Verification. After the POST routines are completed, the following message appears :

**" Press DEL to enter setup"**

To access AWARD PCI/ISA BIOS Setup program, press <Del> key. The following screen will be displayed at this time.



---

## 4.2 Standard CMOS Setup

The Standard CMOS Setup is used for basic system hardware configuration. Every time when you change any hardware configuration, for example memory size, you have to modify this setup again. Please refer the following screen for this setup.

### **Mode Setting for >528MB IDE HDD**

When the IDE hard disk drive you are using is larger than 528MB, please set the HDD mode to **LBA** mode.

Note : Setting incorrect drive mode may make the drive working improperly.

---

### **4.3 BIOS Features Setup**

This setup is designed for customer's tuning best performance of the PSC-586 board. As for normal operation customers don't have to change any default setting. The default setting is pre-set for most reliable operation. Please refer the following screen for the BIOS Features Setup.

**Virus Waring :**

Enable - Will halt system when any attempt to write to boot sector or partition table of hard disk.

**IDE HDD Block Mode :**

Enable - Will improve the performance if your HDD supports 16-bit Block Transfer Mode.

**Video BIOS Shadow :**

Enable - Will increase the video speed.

**C8000-CFFFF,D0000-D7FFF,& D8000-DFFFF Shadow :**

When the installed add-on card's ROM address is as above address,you could enable the shadow to get higher operation performance.When you enable the shadow function,it will also reduce the memory available by between 640KB and 1024KB.

---

## **4.4 Chipset Features Setup**

This setup functions are almostly working for ChipSet(ALI M1449 and M1451). These options are used to change the ChipSet's registers. Please carefully change any default setting ,otherwise the system could be running un-stable.



**Auto Configuration :**

Enable : The BIOS will configure the ChipSet features automatically when boot up the system.

Disable : The BIOS will allow customer to change the setting on the screen.

**L1 Cache Write Back :**

The L1 Cache means the CPU's internal cache(Pentium have 16KB cache inside). When you enable the write back cache ,please make sure the CPU type support write back mode.

**L2 Cache Update Policy :**

The L2 Cache means the external cache,256KB to 1MB.

When set the write back(WB) mode,the system performance will be best.

**Parallel Port Mode :** Normal(default),EPP,ECP,ECP+EPP

**Onboard IDE Controller :** Enabled(default),Disabled

**Onboard FDC Controller :** Enabled(default),Disabled

**Onboard Serial Port 1 :** COM1(default),COM2,COM3,COM4  
Disabled

**Onboard Serial Port 2 :** COM2(default),COM1,COM3,COM4  
Disabled

**Onboard Parallel Port :** 378H(default),278H,3BCH,Disabled

---

## **4.5 Power Management Setup**

Power Management Setup help user handles the PSC-586 board's "green" function. The features will shut down the video display and hard disk to save energy. The power management setup screen is as following,

### **Power Management :**

This is the master control of all power management functions.

The default setting is “disable” for general application.

User Defined : Allows user to set any power saving options.

Min. Saving : System enters power saving mode after  
1 hour no activity.

Max. Saving : System enters power saving mode after  
5 seconds no activity.

### **PM Control by APM :**

No - Default setting

Yes - System BIOS will wait for APM prompt before it enters  
any power management mode.

#### **Note : APM Mode :**

This mode is using for DOS 6.0 or higher version with  
the driver POWER.EXE. The driver should be loaded  
at system power-on by CONFIG.SYS file. POWER.EXE  
will monitor the system status thru the BIOS APM  
interface.

### **Video Off Option :**

Susp,Stby j    Off - Screen Off when system in Suspend or  
Standby mode.

Susp j    Off - Screen Off when system in Suspend mode.

All Modes j    Off - Screen Off when system in Suspend,  
Standby,or Doze mode.

Always On - System BIOS will never turn off the screen.

**Video Off Method :**

Blank Screen : When BIOS do the video off the screen will be blank.

V/H Sync, + Blank : When BIOS do the video off, BIOS will turn of the V-sync & H-sync signals from VGA card and also let the screen blank.

**PM Timers :**

User can set the HDD Power Down, Doze Mode, Standby Mode, and Suspend Mode's time out period. The system will be recovered when the system is re-activity.

**PM Events :**

If there is any activity occurred on the list of the group, the system will wake up. You can set the IRQ1, IRQ3-15 individually in the list.

---

## **4.6 PCI Configuration Setup**

This screen help user configure their PCI bus slots. The PSC-586 supports 4 master PCI slots.

+

**Slot 1-4 Using INT# :**

- Auto - BIOS will ask the PCI add-on card which INT#(A-D) is used for interrupt.  
BIOS will check out which IRQ is available for using.  
BIOS will inform the PCI add-on card which IRQ have been assigned to it.
- A,B,C,D - These options are reserved for some PCI cards did not allow BIOS to check out the card's status.  
Before you set the A,B,C,or D,please make sure the card's INT setting.

**1st-6th Available IRQ :**

The system BIOS will assign the PCI add-on card's IRQ under the available priority.

**PCI IRQ Activity by :**

- Level - Most PCI cards use the level trigger method.
- Edge - Be sure the PCI cards use the edge trigger method before you set it.

**PCI IDE IRQ Map to :**

- PCI-Auto - BIOS will scan all PCI add-on cars and determine the location of the PCI IDE devices.
- PCI-Slot1 - Assign IRQ14 for primary IDE INT# and IRQ15 for secondary IDE INT# for the PCI-slot1

- PCI-Slot2 - Assign IRQ14 for primary IDE INT# and IRQ15 for secondary IDE INT# for the PCI-slot2
- PCI-Slot3 - Assign IRQ14 for primary IDE INT# and IRQ15 for secondary IDE INT# for the PCI-slot3
- PCI-Slot4 - Assign IRQ14 for primary IDE INT# and IRQ15 for secondary IDE INT# for the PCI-slot4
- ISA - The setting is for some PCI IDE cards which directly connect the IRQ14 and IRQ15 to ISA slot thru a cord. This cord is called the Legacy Header.

## Appendix A. Watch-Dog Timer

The Watch-Dog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that caused the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a non-maskable interrupt (NMI) to bring the system back to a known state.

The Watch-Dog Timer is controlled by two I/O ports.

443 (hex)	Read	Enable the refresh the Watch-Dog Timer.
043 (hex)	Read	Disable the Watch-Dog Timer.

To enable the Watch-Dog Timer, a read from I/O port 443H must be performed. This will enable and activate the countdown timer which will eventually time out and either reset the CPU or cause an NMI depending on the setting of JP18. To ensure that this reset condition does not occur, the Watch-Dog Timer must be periodically refreshed

by reading the same I/O port 433H. This must be done within the time out period that is selected by jumper group JP19.

A tolerance of at least 30% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time consuming. Therefore if the time out period has been set to 5 seconds, the I/O port 443H must be read within 3.5 seconds.

---

Note: when exiting a program it is necessary to disable the Watch-Dog Timer, otherwise the system will reset.

---

```

10     REM EXAMPLE PROGRAM
11     REM WATCH-DOG TIMER == WDT
12     GOSUB 5000 REM ENABLE AND REFRESH THE WDT
13     GOSUB 1000 REM TASK 1, 2 SECS
14     GOSUB 5000 REFRESH THE WDT
15     GOSUB 2000 REM TASK 2, 3 SECS
16     GOSUB 6000 REM DISABLE THE WDT
17     GOSUB 3000 REM TASK 3, 5 SECS
18     GOSUB 5000 REM ENABLE AND REFRESH THE WDT
19     GOTO 30

1000   REM SUBROUTINE #1
1001   REM 2 SECONDS TO COMPLETE
1070   RETURN

2000   REM SUBROUTINE #2
2001   REM 3 SECONDS TO COMPLETE
2070   RETURN

5000   REM SUBROUTINE TO ENABLE AND RESET WDT
5010   X = INP( &H443) REM ENABLE AND REFRESH TIMER
5020   RETURN

6000   REM SUBROUTINE TO DISABLE THE WDT
6010   X = INP( &H43) REM RESET WDT
6020   RETURN

```