

Predator 747

***Motherboard
Installation Guide***

Contents

Introduction	V
Predator 747 - An Overview	VII
 <i>Chapter 1 Pre-Configuration</i>	<i>1</i>
Handling Precautions	1
Static Warning	1
 Step 1 - Setting the Jumpers	3
Jumper Locations	4
Standard I/O Enable	5
CMOS Reset	5
I/O Port IRQ Selection	6
CPU Type Settings	6
Clock Speed Selection	6
DMA Configuration For ECP Parallel Port	7
Voltage Regulator Detection	7
Clock Multiplier	8
Cache Size	8
VL Bus Frequency	8
VL Bus Wait States	9
Quick Jumper Settings For Most Used CPUs	9
 Step 2 - DRAM, CPU and Cables Installation	11
Predator 747 Memory Configuration	11
Installing Memory Modules	11
CPU Installation	13
Installing Cables	15
Power and Control Panel Cables	15
Installing Peripheral Cables	18

Chapter 2 - WinBIOS Setup 20

Starting WinBIOS Setup 20
Default Settings 20
WinBIOS Setup Main Menu 22

Section 1 - Setup 22

Standard Setup 22

Date/Time 22
Floppy Drive A, B 22
Pri Master/Pri Slave 22
Sec Master/Sec Slave 22
Configuring an MFM Drive 22
User-Defined Drive 23
Configuring IDE Drives 23
Configuring a CD-ROM Drive 24

Advanced Setup 24

Quick Boot 24
BootUp Sequence 24
BootUp NumLock 24
Floppy Drive Swap 24
Floppy Drive Seek 25
Mouse Support 25
Typematic Rate 25
System Keyboard 25
Primary Display 25
Password Check 25
OS/2 Compatible Mode 25
Wait For F1 if Error 26
Press <F1> to continue 26
Hit Del Message Display 26
Hit if you want to run Setup 26
Internal Cache 26
External Cache 26
System BIOS Shadow Cacheable 26
Chipset Setup 27

Memory Hole	27
Power Management Setup	27
Power Management/APM	27
Instant-On Support	28
Green PC Monitor Power State	28
Video Power Down Mode	28
Hard Disk Power Down Mode	28
Hard Disk Timeout (Minute)	28
Standby Timeout (Minute)	28
Suspend Timeout (Minute)	29
Display Activity	29
Serial and Parallel Ports	29
PCI/PnP Setup	30
Plug and Play Aware OS	30
PCI Burst Mode	30
PCI Concurrency / PCI Latency Timer (in PCI Clocks)	30
PCI Streaming / PCI VGA Palette Snoop	30
Reserved Memory Size	31
Reserved Memory Address	32
Peripheral Setup	32
Onboard FDC	32
Onboard Serial Port1	32
Onboard Serial Port2	32
On-board Parallel Port	32
Parallel Port Mode	33
Parallel Port DMA	33
Onboard PCI IDE	33
Section 2 - Utility	34
Section 3 - Security	34
Setting a Password	35
Changing a Password	35
Anti-Virus	36
Section 4 Default	37
Original	37
Optimal	37

Fail-Safe 37

Chapter 3 - Upgrading..... 38

Upgrading the System Memory 38

Upgrading the Microprocessor 38

Upgrading the Cache Memory 38

Appendix A - Tech. Specifications... 40

Appendix B - Flash Bios 56

Appendix C - Troubleshooting 58

Appendix D - Glossary of Terms 60

Introduction

Thank you for your purchase of the Predator 747 system board. The Predator 747 system board has the awesome versatility of over 21 complete industrial grade motherboards in one. With a quick change of the CPU and setup jumpers. With proper installation and maintenance, your Predator 747 will provide years of high performance and trouble free operation.

This manual provides a detailed explanation into the installation and use of the Predator 747 system board. This manual is written for the novice PC user/installer. However, as with any major computer component installation, previous experience is helpful and should you not have prior experience, it would be prudent to have someone assist you in the installation. This manual is broken down into 3 chapters and 4 appendix.

Chapter 1 - System Board Pre-Configuration

This chapter provides all the necessary information for installing the Predator 747. Topics discussed include: Installing the CPU (if necessary), DRAM installation, jumper settings for CPU, cache and standard I/O. Connecting all the cables from the system board to the chassis and peripherals.

Chapter 2 - BIOS Configuration

This chapter discusses the final step in getting your system firmware setup.

Chapter 3 - Upgrading

The Predator 747 provides a number of expansion options including memory and cache. All aspects of the upgrade possibilities are covered.

Appendix A - Technical Specifications

A complete listing of all the major technical specifications of the Predator 747 is provided.

Appendix B - Flash BIOS Programming

Provides all the information necessary to program your optional AMIBIOS Flash BIOS.

Appendix C - Troubleshooting

This Chapter lists the solutions for the most common questions on the Predator 747 operation.

Appendix D - Glossary Of Terms

Static Electricity Warning!

The Predator 747 has been designed as rugged as possible but can still be damaged if jarred sharply or struck. Handle the motherboard with care. The Predator 747 also contains delicate electronic circuits that can be damaged or weakened by static electricity. Before removing the Predator 747 from its protective packaging, it is strongly recommended that you use a grounding wrist strap. The grounding strap will safely discharged any static electricity built up in your body and will avoid damaging the motherboard. Do not walk across a carpet or linoleum floor with the bare board in hand.

Warranty

This product is warranted against material and manufacturing defects for two years from the date of delivery. Buyer agrees that if this product proves defective the manufacturer is only obligated to repair, replace or refund the purchase price of this product at manufacturer's discretion. The warranty is void if the product has been subjected to alteration, neglect, misuse or abuse; if any repairs have been attempted by anyone other than the manufacturer; or if failure is caused by accident, acts of God, or other causes beyond the manufacturer's control.

Predator 747 - An Overview

The Predator 747 represents the ultimate in system board technology. No other system board available today provides such impressive list of features:

CPU Support

Intel SX, DX, DX2, DX4 and DX4 Overdrive™
Intel P24T™
AMD DX, DX2, DX4 and 5X86™
Cyrix DX, DX2 and 5x86™

CPU Clock Speeds

20, 25, 33, 40, 50, 66, 63, 80, 83, 100, 120, and 133 MHz.

Supported Bus Clocks

20, 25, 33, 40 and 50 MHz.

Memory

32 or 36-bit JEDEC (recommended) standard FPM SIMMS -
70ns minimum access speed Memory capacity: 1 to 128MB.

High Speed DRAM Cache

128K expandable to 256K of write-thru or write-back, selectable level 2 cache

ROM BIOS

AMI© WinBIOS™ BIOS with optional FLASH ROM for easy field upgrades.

On-Board I/O

- Up to 4 enhanced IDE drives on the VL-Bus
- 2 Floppies up to 2.88 Mb
- Two high speed RS-232 serial ports 16Byte FIFO (16550)
- One Centronics™ compatible bidirectional parallel port EPP/ECP mode compatible
- PS/2 mouse port

Conventions Used in this Manual

When instructed to enter keyboard keystrokes, the text will be noted by:

Enter Keystroke

Information displayed on the screen other than figure is displayed as:

Enter Password

Information presented in a text box denotes special interest. There are two types:



Important Information - such as static warnings, or very important instructions



Notes - Such as a brief discussion of memory types.

User's Notes:

Chapter 1 Pre-Configuration

This chapter provides all the necessary information for installing the Predator 747 into a standard PC chassis. Topics discussed include: installing the CPU (if necessary), DRAM installation, jumper settings for CPU, cache and standard I/O.

Handling Precautions

The Predator 747 has been designed to be as rugged as possible but it can be damaged if dropped, jarred sharply or struck. Damage may also occur by using excessive force in performing certain installation procedures such as forcing the system board into the chassis or placing too much torque on a mounting screw.

Take special care when installing or removing the system memory SIMMs. Never force a SIMM into a socket. Screwdrivers slipping off a screw and scraping the board can break a trace or component leads, rendering the board unusable. Always handle the Predator 747 with care.



Special Warranty Note:

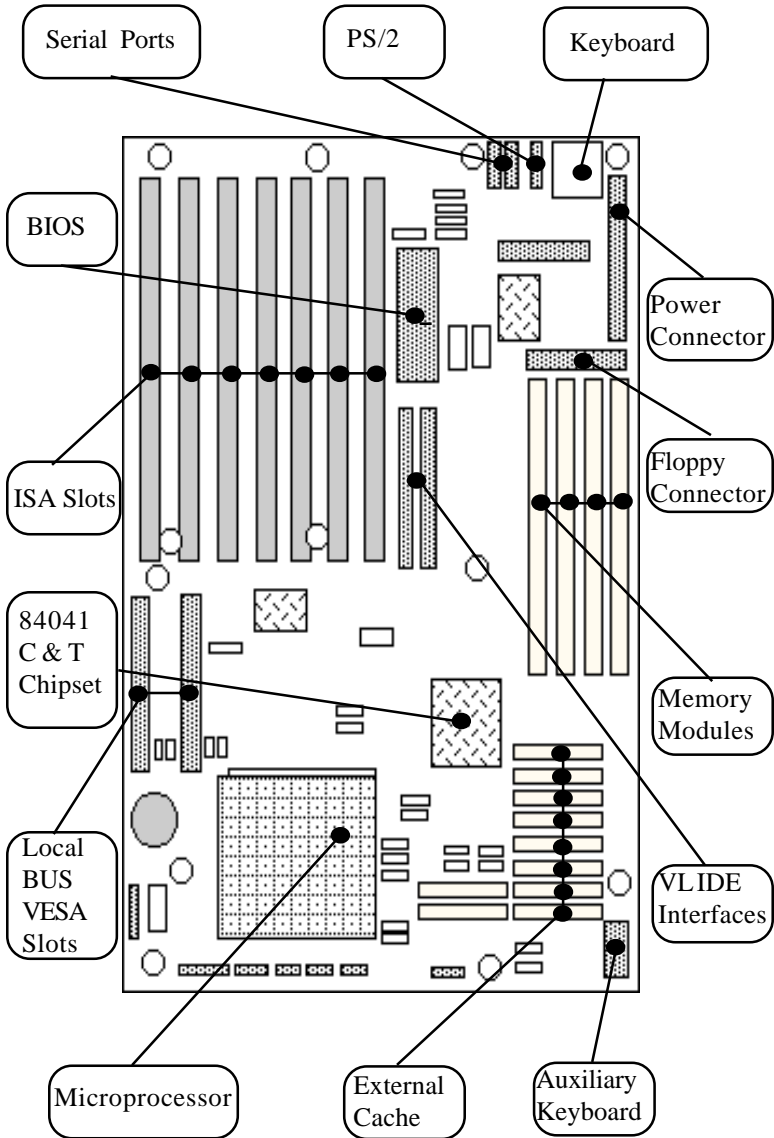
Products returned for warranty repair will be inspected for damaged caused by improper installation and misuse as described in the previous section and the static warning below. Should the board show signs of abuse, the warranty will become void and the customer will be billed for all repairs and shipping and handling costs.

Static Warning

The Predator 747 contains delicate electronic semiconductors that are highly sensitive to static electricity. These components, if subjected to a static electricity discharge, can be weakened thereby reducing the serviceable life of the system board. BEFORE THE BOARD IS REMOVED FROM ITS PROTECTIVE ANTISTATIC PACKAGING TAKE PROPER PRECAUTIONS! Work on a conductive surface that is connected to ground. Before touching any electronic device, ground your-

self by touching an unpainted metal object or, and highly recommended, use a grounding strap.

Figure 1-1 Predator 747 System Board



Step 1 - Setting the Jumpers

Your Predator 747 is equipped with a large number of peripherals and has the ability to run at a variety of speeds without the need to change any crystals or oscillators. As such, there is a large number of configuration jumpers on the board. Taken step by step, setting these jumpers is easy. We suggest you review each section and follow the instructions.

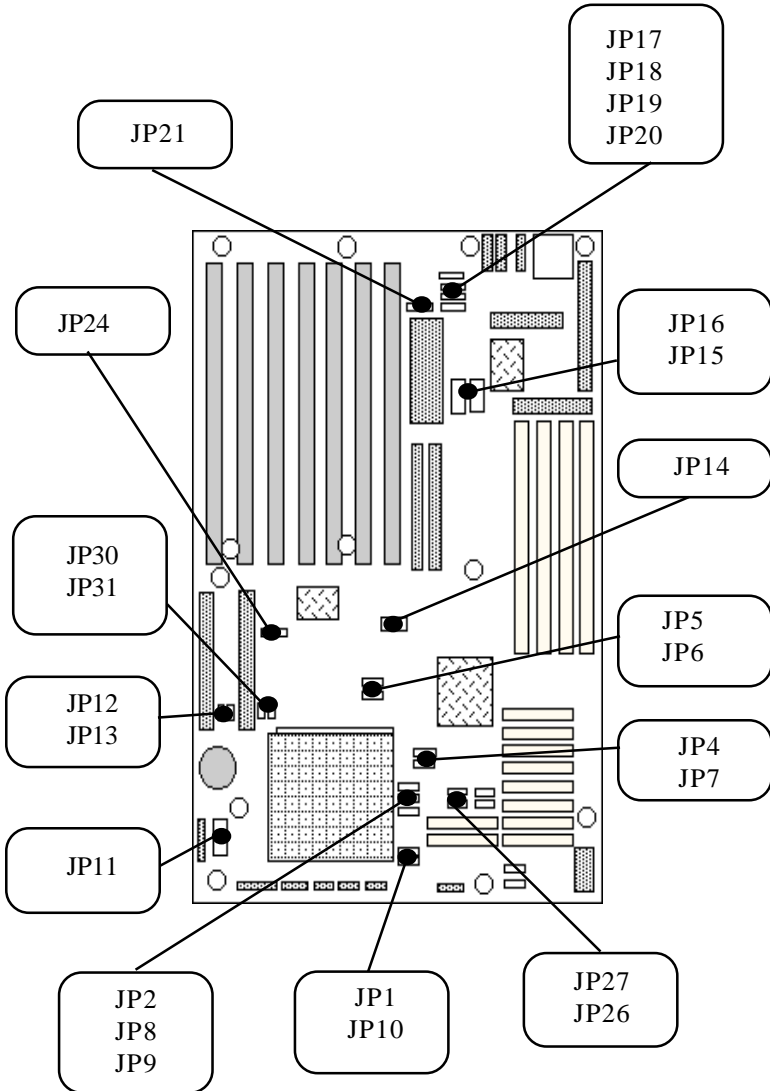
Jumper Types

Jumpers are small copper pins attached to the system board. Covering two pins with a shunt closes the connection between them. The Predator 747 examines these jumpers to determine specific configuration information. There are three different categories of jumpers on the Predator 747.

- A. Two pin jumpers are used for binary selections such as enable, disable. Instructions for this type of jumper are open, for no shunt over the pins or closed, when the shunt covers the pins.
- B. Three or four pin jumpers are used for multiple selection. Instructions for these jumpers will indicate which two pins to cover. For example: for JPx 2-3 the shunt will be covering pins 2 and 3 leaving pins 1 and 4 exposed.
- C. Grouped Jumpers are used when a certain function has multiple selections. There are two grouped jumpers on the board and careful attention should be given when setting these jumpers. Instructions for grouped jumpers are similar to those above - Jumper Location and Pin Numbers.

Jumper Locations

Use the diagram below and the tables on the following pages to locate and set the on-board configuration jumpers.



Standard I/O Enable

The Predator 747 standard I/O consists of the two serial ports, the parallel port and floppy disk controller. Jumper JP17 is used to enable or disable these ports.

Table 1-1 Standard I/O Enable

I/O	Enable	Disable
JP17	1-2*	2-3

CMOS Reset

This option is provided as a convenience for those who need to reset the CMOS registers. It should always be set to “Normal” for standard operation. If the CMOS needs to be reset turn off the system, move JP24 to 2-3, turn the system on, move JP24 back to 1-2 and reset the motherboard.

Table 1-2 CMOS Reset

RTC	Normal	Reset
JP24	1-2*	2-3

I/O Port IRQ Selection

The parallel port and both serial ports must have their IRQs. Normally, these settings can be left in their default settings and only when conflicts arise should they be changed. Jumper JP18 is used to select the parallel port IRQ. Jumper JP19 is used to select the first serial port's IRQ. Jumper JP20 is used to select the second serial port's IRQ. Use Table 1-8 to select the IRQs for these options.

Table 1-3 I/O Port IRQ Selection

Port	Jumper	1-2	2-3	Open
Parallel Port	JP18	IRQ 7*	IRQ 5	Disable
First Serial Port	JP19	IRQ 4*	IRQ 5	Disable
Second Serial Port	JP20	IRQ 3*	IRQ 9	Disable

Clock Speed Selection

The jumper JP14 allow you to choose the appropriate CPU speed, without changing crystals and oscillators.

Table 1-4 CPU Clock Frequency

Clock Frequency	JP14
20MHz	1-2
25MHz	3-4
33MHz	5-6
40MHz	7-8
50MHz	9-10

CPU Type Settings

The jumpers JP5 and JP6 allow you to choose the appropriate CPU type, without changing crystals and oscillators.

Table 1-5 CPU Type Settings

CPU	JP5	JP6
SX	1-2	1-2
DX/DX2/DX4/5x86	2-3*	2-3*
P24T	2-3	1-2

DMA Configuration for ECP Parallel Port

The jumpers JP15 and JP16 are designated for the configuration of the ECP parallel port.

Table 1-6 DMA Configuration for ECP Parallel Port

Port	Jumper	1-2*	3-4	5-6	7-8
ECP DMA	JP15	Disabled	DMA 3	DMA 5	DMA 6
	JP16	Disabled	DMA 3	DMA 5	DMA 6

Voltage Regulator Detection

The jumper JP11 select the voltage for the CPU. Positions 1-2, 3-4 are auto-select for Intel, AMD and Cyrix 5X86 CPUs.

Table 1-7 Voltage Regulator Detection

JP11	Voltage	CPU
1-2	Auto detect*	Intel/AMD DX/DX2/DX4
3-4	Auto detect*	AMD/Cyrix 5x86
5-6	5V	Cyrix DX/DX2
7-8	3.45V	Cyrix DX/DX2

Clock Multiplier

The jumper JP10 sets the multiplier for the AMD CPUs.

Table 1-8 Clock Multiplier

JP10	Multiplier
1-2*	3x
2-3	2x
3-4	N/A

Cache Size

The jumpers JP26 and JP27 allow you to choose the cache size desired.

Table 1-9 Cache Size Selection

Cache Size	128K	256K
JP26	1-2*	1-2
JP27	2-3*	1-2

VL Bus Frequency

The jumpers JP13 and JP31 allow you to choose the frequency on the VL Bus.

Table 1-10 VL Bus Frequency

JP13	JP31	Frequency
Open	Open	< 33MHz
1-2*	1-2*	33, 40 and 50MHz

* *Manufacturer's Settings*

VL Bus Wait States

The jumpers JP12 and JP30 sets the wait states for the VL slots.

Table 1-11 VL Bus Wait States

JP12	JP30	Wait States
Open	Open	0 wait states
1-2*	1-2*	1 wait states

* *Manufacturer's Settings*

Quick Jumper Settings For Most Used CPUs

Table 1-12 CPU Jumper Settings

CPU Type	JP4	JP7	JP2	JP8	JP9
	SMI	SMI	WB/WT	HITM	HITM
INTEL DX STANDARD WRITE-THRU	1-2	1-2	1-2	1-2	1-2
INTEL DX SL WRITE-THRU	1-2	1-2	1-2	1-2	1-2
INTEL SX SL WRITE-THRU	1-2	1-2	1-2	1-2	1-2
AMD 486DX2 STANDARD WRITE-THRU (NV8T)	1-2	1-2	3-4	1-2	1-2
AMD 486DX2 ENHANCED WRITE-BACK (SV8B)	1-2	1-2	2-3	2-3	2-3
AMD 486DX4 ENHANCED WRITE-BACK (SV8B)	1-2	1-2	2-3	2-3	2-3
AMD 5x86 WRITE-BACK	1-2	1-2	2-3	2-3	2-3
CYRIX 5x86 WRITE-BACK	1-2	1-2	1-2	2-3	2-3

Table 1-12A CPU Jumper Settings

CPU Type	JP5	JP6	JP10	JP1	JP11
	IGNNE	FERR	CLK	SRST	VOLT
INTEL DX STANDARD WRITE-THRU	2-3	2-3	1-2	2-3	1-2
INTEL DX SL WRITE-THRU	2-3	2-3	1-2	2-3	1-2
INTEL SX SL WRITE-THRU	1-2	1-2	1-2	2-3	1-2
AMD 486DX2 STANDARD WRITE-THRU (NV8T)	2-3	2-3	1-2	2-3	1-2
AMD 486DX2 ENHANCED WRITE-BACK (SV8B)	2-3	2-3	2-3	2-3	1-2
AMD 486DX4 ENHANCED WRITE-BACK (SV8B)	2-3	2-3	1-2	2-3	1-2
AMD 5x86 WRITE-BACK	2-3	2-3	2-3	2-3	1-2
CYRIX 5x86 WRITE-BACK	2-3	2-3	1-2	2-3	1-2

Step 2 - DRAM, CPU and Cables Installation

Depending upon how your Predator 747 is configured you may need to install the following:

- DRAM (SIMMs)
- CPU

Predator 747 Memory Configuration

The Predator 747 uses standard FPM 70ns access speed or faster SIMMs. It is very important that the quality of the SIMMs is good. Undesirable operation of the system may result if poor quality SIMMs are used. Always purchase your memory from a reliable source.



The Predator 747 uses standard 32 or 36-Bit SIMMs. They are slight larger than other 9-Bit SIMMs that are also commonly used on systems boards. They are configured into four, 8-Bit (or 1 Byte) sections. Thus, a total of 32 Bits (no parity) or 36 Bits (with parity) are stored. This is often confusing because these SIMMs are commonly referred to as 256K by 32 or 36 or 1MB by 32 or 36. To determine the actual capacity of the SIMM, simply multiply the 256K, 512K or 1MB by 4. Thus the actual SIMMS capacity is 1MB, 2MB and 4MB respectively.

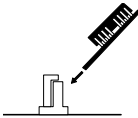
Installing Memory Modules

The Predator 747 has 4 memory module sockets. The order in which they should be populated is from the inside of the board outward. Note that each socket is labeled: U15, U16, U17 e U18. Refer to figure 1.3.

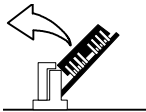
When inserting the memory modules, note the notch on the edge of each module. This notch is designed to permit insertion in only one way. This notch must be pointed towards the keyboard connector.

Start with the innermost socket (U15). Gently place the module into the desired socket at a 30-45° angle. Then gently rotate or rock the module into an upright position. **Never force a memory module into its socket.** Rather, double check the notch and gently rock it into place. When the module has been properly installed, the metal latches on either side of the memory module will “click” into place. (See figure 1-2). Repeat the mentioned steps until all memory modules are installed. No jumpers are involved in DRAM configuration.

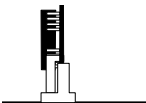
Figure 1-2 SIMM Insertion



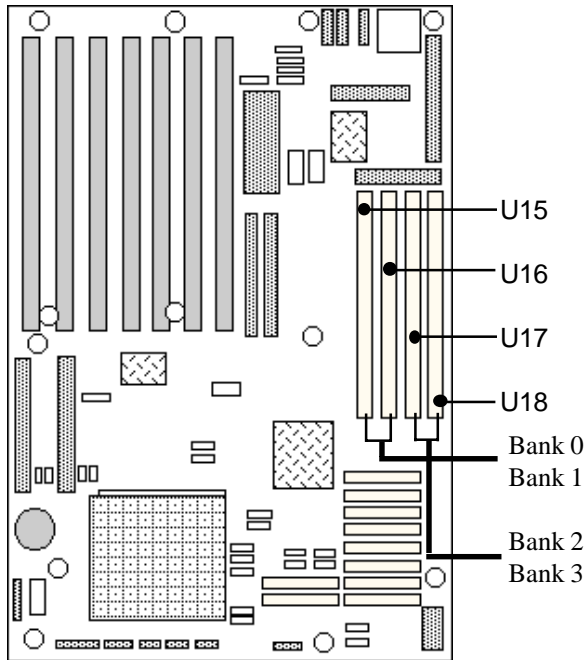
Gently place the SIMM into the desired socket at 30-45 angle.



Then gently rotate or rock the SIMM into an upright position. **Never force a SIMM into its socket.**



Double check the notch and gently rock it into place if properly installed the SIMM will "click".

Figure 1-3 Memory Modules Socket Locations

CPU Installation

The Predator 747 currently supports the following CPUs:

- Intel P24T
- Intel SX, DX, DX2, DX4 and DX4 overdrive
- Cyrix DX, DX2 and 5X86
- AMD DX, DX2, DX4 and 5X86



1. *Improper installation of the CPU may cause permanent damage to both the system board and the CPU. -- Void of warranty*

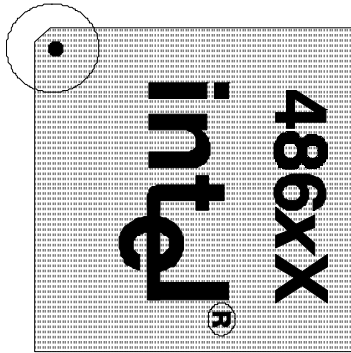
2. *Always handle the CPU by the edges, never touch the pins.*

3. *Always use a heatsink and CPU fan.*

Using Figure 1-4, locate the diagonal notch on the CPU chip. This notch represents pin one. The 486 processor also has small dot as well indicating pin 1. **DO NOT USE THE CHIP LOGO OR LETTERING TO LOCATE PIN ONE.**

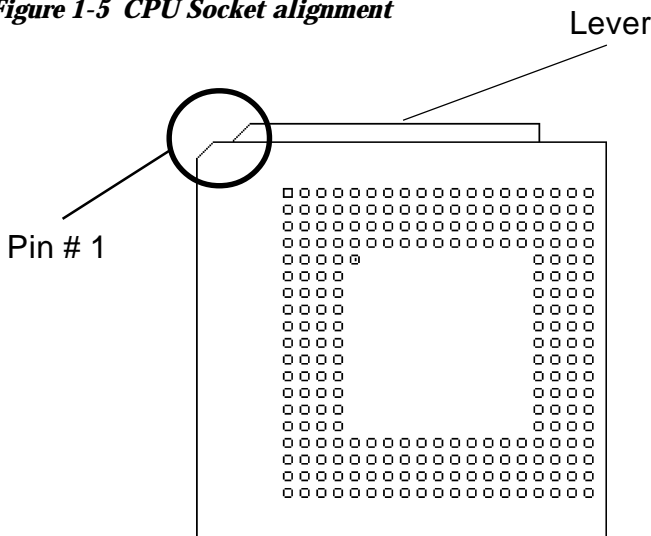
Locate the CPU socket on your Predator 747 system board. Pin 1 on the socket is located in the lower left hand corner of the socket.

Figure 1-4 CPU Alignment



To install the Microprocessor lift the lever of the ZIF socket and gently insert the CPU. Make sure the CPU is inserted all the way. Lower the lever. See figure 1-5.

Figure 1-5 CPU Socket alignment

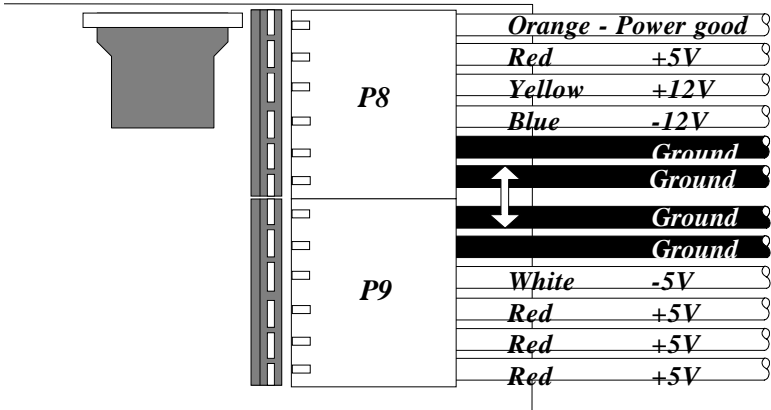


This completes the installation of the CPU. Now is a good time to double check both the CPU and SIMM installation to make sure that these devices have been properly installed.

Installing Cables

Power and Control Panel Cables

Figure 1-6 Power and Control Panel Cables



Connect the power supply cables to the system board. There is no formal convention for color coding the wires on power supplies except for ground wires which are black. Use figure above to determine the proper cable locations.

Next install the control panel cables for each of the control panel headers. These headers are located along the bottom of the board. Again, there is no standard convention for color coding these cables. However, the connectors for “Key lock/Power LED” and “Speaker” are keyed. While the actual connector on the cable harness may not be keyed, there will probably be a wire missing.

Figure 1-7 On-Board Connectors Location

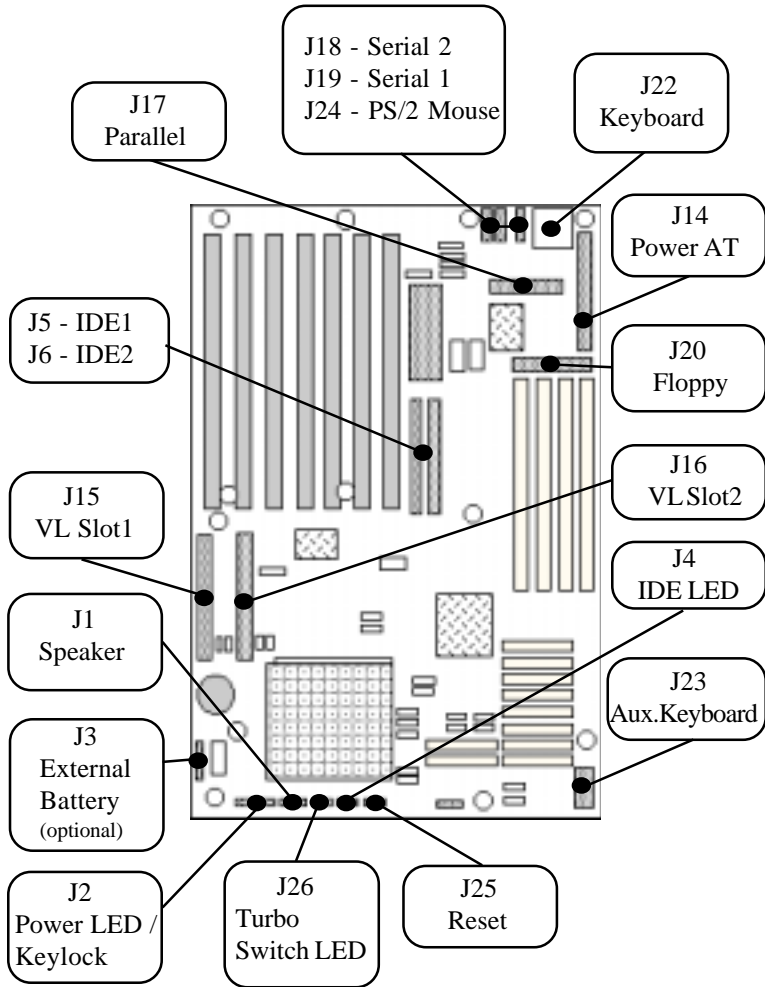


Table 1-13 Control Panel Connectors

Connector	Description
J1	Speaker 1-SPK/2-key/3-GND/4-VCC
J2	Power LED / KBD. Lock 1-LED/2-key/3-GND/4-VCC
J3	External Battery
J4	IDE LED 1-positive/2-signal
J5	IDE 1
J6	IDE 2
J14	AT Power
J15	VL Interface
J16	VL Interface
J17	Parallel
J18	Serial 2
J19	Serial 1
J20	Floppy
J22	Keyboard
J23	Aux. Keyboard
J24	PS/2 Mouse
J25	Reset
J26	Turbo 1-VCC/2-LED/3-Switch/4-GND

Installing Peripheral Cables

Begin with the top of the Predator 747 system working left to right. Refer Figure 1-1 for the locations of each of the peripheral connectors.

Now it is a good time to install the internal peripherals such as floppy and hard disk drives. Do not connect the power cable to these peripherals as it is easier to attach the bulky ribbon cables before the smaller power connectors. If you are installing more than one IDE drive double check your master/slave jumpers on the drives. Review the information supplied with your drive for more information on this subject.

Connect the floppy cable (not included) to the system board. Then connect remaining ends of the ribbon cable to the appropriate peripherals.

Finally, connect the IDE cable (not included) to the system. Then connect remaining ends of the ribbon cable to the appropriate peripherals. This concludes the hardware installation of your Predator 747 system. Now it is a good time to re-check all of the cable connections to make sure they are correct. It is also a good idea to label each of the external peripheral connectors - COM1, COM2, Mouse and Parallel.

User's Notes:

Chapter 2 WinBIOS Setup

Your Predator 747 features an AMI BIOS with available a new type of system BIOS Setup utility. WinBIOS Setup has a graphical user interface that permits mouse access, and is so compact that it can reside on the same ROM as the system BIOS. The system configuration parameters are set via WinBIOS Setup. Since WinBIOS Setup resides in the ROM BIOS, it is available each time the computer is turned on.

Starting WinBIOS Setup

As POST executes, the following appears:

Hit if you want to run SETUP

Using a Mouse with WinBIOS Setup

WinBIOS Setup has a built-in mouse driver and can be accessed by either a serial or PS/2-type mouse.

Using the Keyboard with WinBIOS Setup

WinBIOS Setup has a built-in keyboard driver that uses simple keystroke combinations:

Keystroke Function

<Tab>	Move to the next window or field.
, , ,	Move to the next field to the right, left, above, or below.
<Enter>	Select in the current field.
+	Increments a value.
-	Decrements a value.
<Esc>	Closes the current operation and return to previous level.
<PgUp>	Returns to the previous page.
<PgDn>	Advances to the next page.
<Home>	Returns to the beginning of the text.
<End>	Advances to the end of the text.
<Alt> <H>	Access a help window.
<Alt> <Spacebar>	Exit WINBIOS Setup.
Alphabetic keys	A to Z are used in the Virtual Keyboard, and are not case-sensitive.
Numeric keys	0 to 9 are used in the Virtual Keyboard and Numeric Keypad.

WinBIOS Setup Main Menu

The WinBIOS Setup main menu is organized into four windows. Each window corresponds to a section in this chapter.

Each section contains several icons. Clicking on each icon activates a specific function. The WinBIOS Setup icons and functions are described in this chapter. Some options may not be available in your BIOS. The sections are:

Setup: Described in Section 1. This section has five icons that permit you to set system configurations: standard setup, advanced setup, chipset setup, power management setup and peripheral setup.

Utilities: Described in Section 2. This section has two icons that perform system functions.

Security: Described in Section 3. This section has three icons that control WinBIOS security features.

Default: Described in Section 4. This section has three icons that permit you to select a group of settings for all WinBIOS Setup options.

Default Settings

Original: Returns settings to previous settings.

Optimal: These settings provide the best performance characteristics.

Fail-Safe: These settings are more likely to configure a workable computer when something is wrong. If you cannot boot the computer successfully, select the *Fail-Safe WinBIOS Setup* options and try to diagnose the problem after the computer boots. These settings do not provide optimal performance.

Section 1 Setup

WINBIOS Setup can have up to six separate screens. Different types of system configuration parameters are set on each screen.

Standard Setup

Standard Setup options are displayed by choosing the Standard icon from the WINBIOS Setup menu. All Standard Setup options are described below.

Date/Time

Select the Date/Time option to change the date or time. The current date and time are displayed. Enter new values through the displayed window.

Floppy Drive A, B

Choose the Floppy Drive A or B icon to specify the floppy drive type. The settings are *360 KB 5¼"*, *1.2 MB 5¼"*, *720 KB 3½"*, *1.44 MB 3½"*, or *2.88 MB 3½"*.

Pri Master Pri Slave

Sec Master Sec Slave

Choose these icons to configure the hard disk drive named in the option. When you click on an icon, the following parameters are listed: Type, LBA/Large Mode, Block Mode, 32Bit Mode, and PIO Mode. All parameters relate to IDE drives except **Type**.

Configuring an MFM Drive

If configuring an old MFM hard disk drive, you must know the drive parameters (number of heads, number of cylinders, number of sectors, the starting write precompensation cylinder, and drive capacity). Choose **Type** and choose the appropriate hard disk drive type (1 - 46). If the drive parameters of your MFM drive do not match any drive type listed, select *User* in the **Type** field and enter the drive parameters on the screen that appears.

User-Defined Drive

If you are configuring a SCSI drive or an MFM, RLL, ARLL, or ESDI drive with drive parameters that do not match drive types 1-46, you can select the *User* in the **Type** field. You must then enter the drive parameters on the screen that appears. The drive

parameters include:

Cylinder (number of cylinders),

Hd (number of heads),

WP (starting write precompensation cylinder),

Sec (number of sectors),

Size (drive capacity).

Configuring IDE Drives

If the hard disk drive to be configured is an IDE drive, select the appropriate drive icon (Pri Master, Pri Slave, Sec Master, or Sec Slave). Select the IDE Detect icon to automatically detect all drive parameters.

AMIBIOS automatically detects the IDE drive parameters (including ATAPI CD-ROM drives) and displays them. Click on the OK button to accept these parameters. Or you can set the parameters manually if you are absolutely certain that you know the correct IDE drive parameters.

- Click on **LBA/Large Mode** and choose *On* to enable support for IDE drives with capacities greater than 528 MB.
- Click on **Block Mode** and choose *On* to support IDE drives that use Block Mode.
- Click on **32Bit Mode** and click on *On* to support IDE drives that permit 32-bit accesses.
- Click on **PIO Mode** to select the IDE Programmed I/O mode. PIO programming also works with ATAPI CD-ROM drives. The settings are *Auto, 0, 1, 2, 3, 4, or 5*. Click on *Auto* to allow AMIBIOS to automatically find the PIO mode that the IDE drive being configured uses. If you select *0-5* you must make absolutely certain that you are selecting the PIO mode supported by the IDE drive being configured.

Configuring a CD-ROM Drive

Select the appropriate drive icon (Pri Master, Pri Slave, Sec Master, or Sec Slave). Choose the **Type** parameter and select CDROM. You can boot the computer from a CD-ROM drive. You can also choose *Auto* and let AMIBIOS will automatically set the correct drive parameters.

Advanced Setup

Advanced Setup options are displayed by choosing the Advanced icon from the WINBIOS Setup main menu. All Advanced Setup options are described in this section.

Quick Boot

Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old **Above 1 MB Memory Test** Advanced Setup option. The settings are: enabled and disabled.

The Optimal and Fail-Safe default settings are *Enabled*.

BootUp Sequence

This option sets the sequence of boot drives (floppy drive A:, hard disk drive C:, or a CD-ROM drive) that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *C:,A:,CDROM*, *CDROM,A:,C:*, or *A:,C:,CDROM*. The default settings are *C:,A:,CDROM*.

BootUp NumLock

Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off*. The default settings are *On*.

Floppy Drive Swap

Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Floppy Drive Seek

Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Disabled* or *Enabled*. The optimal and fail-safe default settings are *Disabled*.

Mouse Support

When this option is set to *Enabled*, AMIBIOS supports a PS/2-type mouse. The settings are *Enabled* or *Disabled*. The default settings are *Enabled*.

Typematic Rate

This option specifies the speed at which a keyboard keystroke is repeated. The settings are *Fast* or *Slow*. The Optimal and Fail-Safe default settings are *Fast*.

System Keyboard

This option specifies that a keyboard is attached to the computer. The settings are *Present* or *Absent*. The Optimal and Fail-Safe default settings are *Present*.

Primary Display

This option specifies the type of display monitor and adapter in the computer. The settings are *Mono*, *CGA40*, *CGA80*, *EGA/VGA*, or *Absent*. The Optimal and Fail-Safe default settings are *EGA/VGA*.

Password Check

This option enables password checking every time the computer is powered on or every time WINBIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if WINBIOS is executed.

The Optimal and Power-On defaults are *Setup*.

OS/2 Compatible Mode

Set this option to *Enabled* to permit AMIBIOS to run with IBM OS/2. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Wait For F1 if Error

AMIBIOS POST error messages are followed by:

Press <F1> to continue

If this option is set to *Disabled*, AMIBIOS does not wait for you to press the <F1> key after an error message. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Hit Del Message Display

Set this option to *Disabled* to prevent the message

Hit if you want to run Setup

from appearing on the first AMIBIOS screen when the computer boots. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Internal Cache

This option specifies the caching algorithm used for L1 internal cache memory. Depending on the CPU used and the jumper-setting, the options are: *Disabled*, *Write Back* (default) or *Write Thru*.

External Cache

This option specifies the caching algorithm used for L2 secondary (external) cache memory. The settings are: *Disabled*, *Write Back* or *Write Thru* (default).

System BIOS Cacheable

When this option is set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to system RAM for faster execution. The settings are *Enabled* or *Disabled*. The Optimal default setting is *Enabled*. The Fail-Safe is *Enabled*. The Fail-Safe default setting is *Disabled*. default is Disabled

C000,32K Shadow

C800,16K Shadow

CC00,16K Shadow

D000,64K Shadow

These options control the location of the contents of the 16KB of ROM beginning at the specified memory location. If no adaptor ROM is using the named ROM area, this area is made available to the local bus. The settings are: *Enabled and Disabled* and *Cached*.

Chipset Setup

Memory Hole

Use this option to specify an area in memory that cannot be addressed on the ISA bus. The settings are *Disabled, 512-640K* or *15-16MB*. The default setting is *Disabled*.

Power Management Setup

Power Management Setup options are displayed by choosing the Power Mgmt icon from the WinBIOS Setup main Menu. All Power Management Setup options are described in this section.

Power Management/APM

Set this option to *Enable* to enable the power management and APM (Advanced Power Management) features. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Inst-On Support

This option Enables the standby feature. The default setting is *Disabled*.

Green PC Monitor Power State

This option specifies the power management state that the Green PC-compliant video monitor enters after the specified period of display inactivity has expired. The settings are *Off*, *Standby*, *Disabled*, and *Suspend*. The default setting is *Disabled*.

Video Power Down Mode

This option specifies the power management state that the video subsystem enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*. The default settings are *Disabled*.

Hard Disk Power Down Mode

This option specifies the power management state that the hard disk drive enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*. The default settings are *Disabled*.

Hard Disk Timeout (Minute)

This option specifies the length of a period of hard disk inactivity. When this period expires, the hard disk drive enters the power-conserving mode specified in the **Hard Disk Power Down Mode** option described on the previous page. The settings are *Disabled*, *1 Min (minutes)*, and all one minute intervals up to and including *15 Min*. The default settings are *Disabled*.

Standby Timeout (Minute)

This option specifies the length of the period of system inactivity when the computer is in Full-On mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed. The settings are *Disabled*, *1 Min*, *2 Min*, and all one minute intervals up to and including *15 Min*. The default settings are *Disabled*.

Suspend Time Out (minute)

This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in suspend mode. In suspend mode, nearly all power used is curtailed. The settings are *Disabled*, *1 min.*, *2 min.*, and *all one minute intervals up to 15 min.* The default settings are *Disabled*.

Display Activity

This option specifies if AMIBIOS is to monitor activity on the display monitor for power conservation purposes. When this option is set to Monitor and there is no display activity for the length of time specified in the value in the Full-On to Standby Timeout (min) option, the computer enters a power saving state. The settings are *Monitor* or *Ignore*. The default settings are *Ignore*.

Hard Disk Activity

Misc IRQ (8,10,11,12,15)

Serial and Parallel Ports

These options enable event monitoring. When the computer is in a power saving mode, activity on the named interrupt request line is monitored by AMIBIOS. When any activity occurs, the computer enters Full On mode.

Each of these options can be set to *Monitor* or *Ignore*.

PCI/PnP Setup

PCI/PnP Setup options are displayed by choosing the PCI/PnP Setup icon from WINBIOS Setup main menu. All PCI/PnP Setup options are described in this section.

Plug and play Aware OS

Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware. Set this option to *No* if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP. *You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.* The settings are *No* or *Yes*. The optimal and Fail-Safe default settings are *No*.

PCI Latency Timer (in PCI Clocks)

This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The settings are *32, 64, 96, 128, 160, 192, 224, or 248*. The Optimal and Fail-Safe default settings are *64*.

PCI VGA Palette Snoop

This option must be set to *Enabled* if any ISA adapter card installed in the computer requires VGA palette snooping. The settings are *Disabled* or *Enable*. The Optimal and Fail-Safe default settings are *Disabled*.

DMA Channel 0

DMA Channel 1

DMA Channel 3

DMA Channel 5

DMA Channel 6

DMA Channel 7

IRQ3

IRQ4

IRQ5

IRQ7

IRQ9

IRQ10

IRQ11

IRQ14

IRQ15

These options specify the bus that the named DMAs and interrupt request lines (IRQs) are used on. These options allow you to specify IRQs and DMAs for use by legacy ISA adapter cards.

These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRAM (Flash BIOS ROM only). If more IRQs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured as *PCI/PnP*.

The settings are *PCI/PnP* or *ISA/EISA*.

Reserved Memory Size

This option specifies the size of the memory area reserved for legacy ISA adapter cards.

The settings are *Disabled*, *16K*, *32K*, or *64K*. The Optimal and Fail-Safe default settings are *Disabled*.

Reserved Memory Address

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

The settings are *C0000*, *C4000*, *C8000*, *CC000*, *D0000*, *D4000*, *D8000*, or *DC000*. The Optimal and Fail-Safe default settings are *C0000*.

Peripheral Setup

Peripheral Setup options are displayed by choosing the Peripheral Setup icon from the WINBIOS Setup main menu. All Peripheral Setup options are described in this section.

Onboard FDC

This option enables the floppy drive controller on the motherboard. The settings are *Enabled*, *Disabled* or *Auto*. The Optimal default setting is *Auto*. The Fail-Safe default setting is *Auto*.

Onboard Serial Port1

This option enables serial port 1 on the motherboard and specifies the base I/O port address for serial port 1.

The settings are *Auto*, *3F8h*, *2F8*, *3E8*, *2E8* or *Disabled*. The Optimal and Fail-Safe default settings are *Auto*.

Onboard Serial Port2

This option enables serial port 2 on the motherboard and specifies the base I/O port address for serial port 2.

The settings are *Auto*, *3F8h*, *2F8*, *3E8*, *2E8* or *Disabled*. The Optimal and Fail-Safe default settings are *Auto*.

On-board Parallel Port

This option enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The settings are *Auto*, *378h*, *278h*, *3BC*, or *Disabled*. The Optimal and Fail-Safe default setting are *Auto*.

Parallel Port Mode

This option specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes that adhere to the IEEE P1284 specifications. The settings are: *Normal*, *Bi-Directional*, *EPP*, *ECP*.

Parallel Port DMA

This option is only available if the setting for the **Parallel Port Mode** option is *ECP*.

The settings are *Disabled*, *DMA CH (channel) 0*, *DMA CH 1*, or *DMA CH 3*. The default setting is *Disabled*.



Refer to Hardware Jumper settings on Chapter one for JP 15 and JP16 when setting for these options.

Onboard IDE

This option specifies the onboard IDE controller channels that will be used. The settings are *Primary*, *Secondary*, *Both*, or *Disabled*. The Optimal and Fail-Safe default settings are *Primary*.

Section 2 Utility

The following icons appear in this section:

Detect IDE and
Language

Detect IDE

This option allows the detection of an IDE hard drive automatically.

Language

English support only.

Section 3 Security

AMIBIOS Password Support

Three icons appear in this part of the WINBIOS Setup screen:

- Supervisor,
- User,
- Anti-Virus.

Two Levels of Passwords

Both the Supervisor and the User icons configure password support. If you use both, the Supervisor password must be set first. The system can be configured so that all users must enter a password every time the system boots or when WINBIOS Setup is executed, using either or both the Supervisor password or User password.

If You Do Not Want to Use a Password

Just press <Enter> when the password prompt appears.

Setting a Password

The password check option is enabled in Advanced Setup by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when WINBIOS is run). The password is stored in CMOS RAM. The following screen appears when you select the password icon from the WINBIOS Setup main menu.

You can enter a password by:

Typing the password on the keyboard or
Selecting each letter via the mouse.

When you select Supervisor or User, AMIBIOS prompts for a password. You must set the Supervisor password before you can set the User password. Enter a 1 – 6 character password. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain CMOS RAM and reconfigure the system.

Changing a Password

Select the appropriate password icon (Supervisor or User) from the Security section of the WINBIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the characters entered. After the new password is entered, retype the new password as prompted and press <Enter>.

If the password confirmation is incorrect, an error message appears. If the new password is entered without error, press <Esc> to return to the WINBIOS Main Menu. The password is stored in CMOS RAM after WINBIOS completes. The next time the system boots, you are prompted for the password if the password function is present and is enabled.

Remember the Password

Keep a record of the new password when the password is changed. If you forget the password, you need to reset the CMOS memory (refer to JP 9 on jumper settings - chapter 1)

Anti-Virus

When this icon is selected from the Security section of the WINBIOS Setup main menu, AMIBIOS issues a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The settings are *Enabled* or *Disabled*. If enabled, the following appears when a write is attempted to the boot sector. You may have to type *N* several times to prevent the boot sector write.

Boot Sector Write!!!

Possible VIRUS: Continue (Y/N)? _

The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service:

Format!!!

Possible VIRUS: Continue (Y/N)? _

User's Notes:

Chapter 3: Upgrading

Upgrading the System Memory

The Predator 747 allows an upgrade of the system memory up to 128MB using SIMMs memory modules. Please refer to chapter one for proper memory installation.

Upgrading the Microprocessor

The Predator 747 currently supports the following CPUs:

Intel SX, DX, DX2, DX4 and DX4 Overdrive™
Intel P24T™
AMD DX, DX2, DX4 and 5X86™
Cyrix DX, DX2 and 5x86™

To upgrade the Microprocessor, please refer to Chapter 1 for proper installation and jumper settings.

Upgrading the Cache Memory

Your Predator 747 Motherboard allows an upgrade of the cache memory up to 256K.

To upgrade the cache memory on your Predator 747 to 256K:

1. Install 4 of 32K x 8 - 15ns SRAMs Chips.
2. Set jumper JP27 to position 1-2.



Watch for polarity when replacing the Cache chips

User's Notes:

Appendix A Technical Specifications

Chip Sets

Core Logic

Chips & Technologies 4041

Peripheral I/O

Chips & Technologies 82C735A or
Standard Microsystems FDC37C665

Micro Processor Support

Intel SX, DX, DX2, DX4 and DX4 Overdrive™
Intel P24T™
AMD DX, DX2, DX4 and 5X86™
Cyrix DX, DX2 and 5x86™

System Memory

Memory Capacity

1 to 128MB of FPM DRAM memory.

Memory Type

Four sockets for JEDEC compatible (72 pin) 32 bit SIMMs, 70ns access speed or faster. All memory configurations is automatic through BIOS.
Supports Fast Page Mode memories.
32 bit SIMMS can be used, but 36 bit is recommended.

Bios

System BIOS

AMI WinBIOS with standard CMOS Setup, Peripheral Setup, Power Management, Automatic Hard Disk Detection and Advanced Chip-set Setup.

Flash BIOS

Optional feature for System BIOS. Flash programming done through BIOS.

Embedded I/O

IDE

Two VL EIDE controllers. Supports up to 4 devices

Floppy

Up to two floppy disk drives. Sizes supported are: 5.25" 360K and 1.2MB; 3.5" 720K, 1.44MB and 2.88MB. Floppy Tape compatible. 34 pin header on-board.

Serial Ports

Two high speed 16550 compatible UARTS.
BIOS configurable as COM1 - 4.

Parallel Port

One Centronics compatible, bi-directional (PS/2 compatible).
Microsoft/HP EPC/EPP high speed.

Mouse Port

One PS/2 compatible mouse controller with 6 pin mini-din connector cable.

Expansion Slots

Seven 16 bit ISA slots, 2 VL slots.

Miscellaneous

CMOS/Battery

RTC with lithium battery. No external battery is required.

Control Panel Connections

Reset, Keylock, Speaker, Turbo. LEDs for power, IDE and turbo.

CPU Socket

Standard ZIF (Zero Insertion Force), socket 3.

Form Factor

Baby AT Size - 8.6" x 13"

PCB Construction

Four Layer, dry film mask.

Manufacturing Process

Automated surface mount.

Reliability

MTBF: Higher than 48,000 hours

Environmental	Operating	Non-Operating
Temperature	0 to +55 C	-40 to +65 C
Humidity	5 to 95% @ 40 C non-condensing	5 to 95% @ 40 C non-condensing
Shock	2.5G @ 10ms	10G 10ms
Vibration	0.25 @ 5-100Hz	5G @ 5-100Hz

Table A-1 Standard PC-AT I/O Map

Address (HEX)	Device
000-01F	DMA Controller
020-03F	Interrupt Controller 1
040-05F	Timer
070-07F	Real Time Clock (non-maskable interrupt)
080-09F	DMA Page Registers
0A0-0BF	Interrupt Controller 2
0C0-0DF	DMA Controller 2
0F8-0FF	Math co-processor
1F0-1FF	Hard Disk Controller
200-207	Game I/O
278-27F	Prototype Card
2F8-2FF	Serial Port 2
300-31F	Parallel Printer Port
380-38F	SDLC Bisynchronous 2
3B0-3AF	Bisynchronous 1
3B0-3BF	Monochrome Display/Printer
3C0-3CF	(Reserved)
3D0-3DF	Color Graphics Display Adapter
3F0-3F7	Floppy Disk
3F8-3FF	Serial Port COM1

Table A-2 DMA Page Register and I/O address

Channel	Function
Page Register	I/O Hex Address
Channel 0	87
Channel 1	83
Channel 2	81
Channel 3	82
Controller 2: 16-bit (at Only - ports 0C0-0DF)	
Channel 5	8B
Channel 6	89
Channel 7	8A
Refresh (AT)	8F

Table A-3 DMA Assignments

Channel	Function
0	Reserved
1	SDLC
2	Floppy Disk
3	Spare
4	Cascade for CTRL
5	Spare (Reserved)
6	Spare (Reserved)
7	Spare (Reserved)

Table A-4 DMA Controller Register

DMA #		Description
1	2	
0	0C0	CH0 base and current address
1	0C2	CH0 base and current word count
2	0C4	CH0 base and current address
3	0C6	CH0 base and current word count
4	0C8	CH0 base and current address
5	0CA	CH0 base and current word count
6	0CC	CH0 base and current address
7	0CE	CH0 base and current word count
8	0D0	Read status register/write command register
9	0D2	Write request register
00A	0D4	Write single mask request register bit
00B	0D6	Write mode register
00C	0D8	Clear byte pointer Flip/Flop
00D	0DA	Read temporary register / Write master clear
00E	0DC	Clear mask register
00F	0DE	Write all mask register bits

Table A-5 Interrupts

Channel	Name	Function
NMI	NMI	Parity
0	IRQ0	System Timer
1	KYBIRQ	Keyboard Output
2	IRQ2	CTRL2 Interrupt (IRQ8-IRQ15)
3	IRQ3	Serial Port 2 (COM2)
4	IRQ4	Serial Port 1 (COM1)
5	IRQ5	Parallel Port 2
6	IRQ6	Floppy Disk Controller
7	IRQ7	Parallel Port 1
8	RTCIRQ	Real Time Clock
9	IRQ9	Available
10	IRQ10	Available
11	IRQ11	Available
12	IRQ12	PS/2 Mouse
13	IRQ13	Math Coprocessor
14	IRQ14	Primary IDE
15	IRQ15	Secondary IDE

Connectors Pin Outs

Table A-6 Serial Connectors

Pin#	Name
1	-DCD
2	-DSR
3	RXD
4	-RTS
5	TXD
6	-CTS
7	-DTR
8	-RI
9	GND
10	N/C

Table A-7 Floppy Disk Drive Connector

Pin#	Name
2	RMP/LC
4	N/C
6	IDO
8	-INDEX
10	-MTRO
12	-DRV1
14	-DRVO
16	-MTR1
18	DIR
20	-STEP
22	-WDATA
24	-WGATE
26	-TRK0
28	-WPRT
29	ID0
30	-RDATA
32	HDSEL
33	ID1
34	DSKCHG
*	GND

Table A-8 Parallel DB25 Connector

Pin#	Name
1	-STROBE
2	+DATA BIT 0
3	+DATA BIT 1
4	+DATA BIT 2
5	+DATA BIT 3
6	+DATA BIT 4
7	+DATA BIT 5
8	+DATA BIT 6
9	+DATA BIT 7
10	ACK1
11	BUSY
12	PAPER EMPTY
13	SLCT
14	AUTOFEED
15	ERROR
16	INIT
17	SLCT IN
18-25	GND

Table A-9 IDE Connector

Pin#	Name	Pin#	Name
1	-RST	21	N/C
2	GND	22	GND
3	D7	2	IOW
4	D8	3	GND
5	D6	24	IOR
6	D9	25	GND
7	D5	26	N/C
8	D10	27	BALE
9	D4	28	N/C
10	D11	29	GND
11	D3	30	IRQ14
12	D12	31	IO16
13	D2	32	SAI
14	D13	34	N/C
15	D1	35	SA0
16	D14	36	SA2
17	D0	37	CS0
18	D15	38	CS1
19	GNC	39	HDIND
20	N/C	40	N/C

Table A-10 PS/2 Mouse Connector

Pin#	Name
1	DATA
2	N/C
3	GND
4	+5V
5	CLOCK
6	N/C

Table A-11 Serial Port Cable Wire List

Pin#	Signal	Pin#	9 Pin
1	-DCD	8	1
2	-DSR	6	6
3	RXD	3	2
4	-RTS	4	7
5	TXD	2	3
6	-CTS	5	8
7	-DTR	20	4
8	-RI	22	9
9	GND	7	5
10	N/C	N/C	N/C

Table A-12 Parallel Port Connector

Pin#	Name	Pin#	Name
1	-STROBE	2	AUTOFEED
3	+DATA BIT 0	4	ERROR
5	+DATA BIT 1	6	INIT
7	+DATA BIT 2	8	SLCT IN
9	+DATA BIT 3	10	GND
11	+DATA BIT 4	12	GND
13	+DATA BIT 5	14	GND
15	+DATA BIT 6	16	GND
17	+DATA BIT 7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PAPER EMPTY	24	GND
25	SLCT	26	N/C

Table A-13 Auxiliary Keyboard Pin Assignments

Pin#	Name
1	GND
2	GND
3	KDATA
4	VCC
5	GND
6	GND
7	GND
8	KCLK
9	GND
10	GND

Table A-14 PS/2 Mouse Pin Assignments

Pin#	Name
1	DATA
2	N/C
3	GND
4	+5V
5	CLOCK
6	N/C

Table A-15 ISA Connector Pin Assignments

Pin#	Assign.	Pin#	Assign.	Pin#	Assign	Pin#	Assign.
A01	IOCHCH	B01	GND	C01	SBHE#	d01	EMCS1
A02	SD7	B02	RESETD	C02	LA23	D02	IOCS16
A03	SD6	B03	+5V	C03	LA22	D03	IRQ10
A04	SD5	B04	IRQ9	C04	LA21	D04	IRQ11
A05	SD4	B05	+5V	C05	LA20	D05	IRQ12
A05	SD3	B06	DRQ2	C06	LA19	D06	IRQ15
A06	SD2	B07	-12V	C07	LA18	D07	IRQ14
A07	SD1	B08	ENDXFR	C08	LA17	D08	DACK0
A08	SD0	B09	+12V	C09	MEMR	D09	DRQ0
A09	IOCHR	B10	GND	C10	MEMW#	D10	DACK5
A10	AEN	B11	SMEMW#	C11	SD8	D11	DRQ5
A11	SA19	B12	SMERW#	C12	SD9	D12	DACK6
A12	SA18	B13	IOW#	C13	SD10	D13	DRQ6
A13	SA17	B14	IOR#	C14	SD11	D14	DACK7
A14	SA16	B15	DACK3#	C15	SD12	D15	DRQ7
A15	SA15	B16	DRQ3	C16	SD13	D16	+5V
A16	SA14	B17	DACK1#	C17	SD14	D17	MASTE
A17	SA13	B18	DRQ1	C18	SD15	D18	GND
A18	SA12	B19	REFRES				
A19	SA11	B20	SYSCLK				
A20	SA10	B21	IRQ7				
A21	SA9	B22	IRQ6				
A22	SA8	B23	IRQ5				
A23	SA7	B24	IRQ4				

Pin#	Assign.	Pin#	Assign.	Pin#	Assign	Pin#	Assign.
A24	SA6	B25	DACK2#				
A25	SA5	B26	TC				
A26	SA4	B27	BALE				
A27	SA3	B28	+5V				
A29	SA2	B29	OSC				
A30	SA1	B30	GND				
A31	SA0	B31					

Appendix B

Flash BIOS programming

If your board has the optional FLASH BIOS installed, you will be able to update your BIOS without having to replace the EPROM. The WinBios will read the new BIOS file from a floppy disk, replace the old BIOS and reboot your computer.

When updating your BIOS, make sure you have a disk with the correct BIOS file (it's size should be 128K).

Rename the file to "AMIBOOT.ROM". Turn your computer off. Insert the disk in Drive A.; turn the computer on while pressing <CTRL><HOME>. Your computer will show no screen, but will beep to indicate what is being done.

If the programming is successful, you should hear the 4 beeps and your computer will reboot with the new BIOS.

Please never turn the power off while reprogramming a FLASH BIOS. Refer to the table on the next page for beep errors.

Table B-1 Flash Bios Beep Errors

Beeps	Description
1	Insert diskette in floppy A:
2	The AMIBOOT.ROM file was not found in the root directory of floppy drive A:
3	Base memory error
4	Flash program successfull
5	Floppy read error
6	Keyboard controller BAT command failed
7	No FLASH EPROM detected
8	Floppy controller failure
9	Boot Block BIOS checksum error
10	Flash erase error
11	Flash program error
12	AMIBOOT.ROM file size error

Appendix C Troubleshooting

Power-On Self Test

The AMIBIOS featured in the Hunter Industrial provides all IBM standard Power-On Self Test (POST) routines as well as enhanced AMIBIOS POST routines. AMIBIOS POST supports CPU internal diagnostics. AMIBIOS POST checkpoint codes are accessible via the manufacturing Test Port (I/O port 80h).

Post Phases:

Every time the system is powered on. AMIBIOS executes two types of POST routines:

System Test and Initialization (test and initialize AMIBIOS for normal operations).

System Configuration Verification (compare defined configuration with hardware actually installed).

BIOS Error Reporting:

If the error occurs before the display device is initialized a series of beeps sound. Beep codes indicate that a fatal error has occurred. AMIBIOS beep codes are described on the next page.

If the error occurs after the display device is initialized the error message is displayed. A prompt to press <F1> can also appear power is on.

Fatal errors, which halt the boot process, are communicated through a series of audible beeps.

Table C-1 Beep Errors

Beeps	Error Message	Description
1	Refresh Failure	The memory refresh circuitry is faulty
2	Parity Error	Parity error in the base memory (the first 64 KB block) of memory
3	Base 64 KB Memory failure	Memory failure in the first 64 KB
4	Timer Not Operational	A memory failure in the first 64 KB of memory, or timer 1 is not functioning
5	Processor Error	The CPU generated an error
6	8042 - Gate A20 failure	Cannot switch to protect mode
7	Processor Exception Interrupt Error	The CPU on the CPU card generated an exception interrupt
8	Display Memory Read/Write Error	The system video adapter is either missing or its memory is faulty. This is not a fatal error.
9	ROM Checksum Error	The ROM checksum value does not match the value enclosed in AMIBIOS
10	CMOS Shutdown Register Read/Write Error	The shutdown register for CMOS RAM has failed
11	Cache Memory Bad -- Do not Enable Cache	The cache memory test failed. Cache memory is disabled. Do not press <ctrl><alt><shift><+> to enable cache memory

Appendix D Glossary of Terms

Bidirectional Parallel Port:

An eight-bit port that can be used for an input as well as an output device.

BIOS (Basic Input/Output Systems):

The on-board firmware which communicates with the display, keyboard, printers and other peripheral devices.

Bus:

One or more electrical conductors that transmit power or binary data to the various sections of a computer.

CMOS (Complementary Metal Oxide Semiconductor):

A technique of fabricating transistors which uses very low power.

CMOS RAM:

Random Access Memory made from CMOS transistors.

DMA (Direct Memory Access Channel):

A channel for transferring data from host main memory to and from peripherals without direct involvement of the CPU resources.

DRAM (Dynamic Random Access Memory):

The main memory in your computer. It needs to be refreshed by a memory or it will lose its information.

EPROM (Erasable Programmable Read Only Memory)

A programmable device which stores information regardless of power. The information can be erased and new information written.

Floating Point Unit (FPU):

A device which can perform calculations on numbers in floating point format as opposed to simple integers.

IDE (Integrated Drive Electronics):

A standard of signalling and communicating with a device.

Interleave

Multiple banks of memory that overlap to reduce the access time and eliminate wait states.

Interrupt:

Temporarily halting the operation of a digital computer to respond to service an external event.

Interval Timer:

A device that can generate a pulse at a defined interval for background tasks.

IRQ (Interrupt Request):

A signal channel used to trigger the CPU to temporarily change tasks

Kilobyte (KB):

1024 bytes

ns (nano seconds):

1×10^{-9} seconds. (There are one billion nanoseconds in one second)

Page Mode:

The ability to read a whole line (page) of memory to reduce access time

Parity:

A way to detect corrupted data in DRAM.

Parallel Port:

An eight-bit port usually used for connecting a printer.

PCI (Peripheral Component Interconnect):

Local bus for PCs provide a high-speed data path between the CPU and peripherals (video, disk, network, etc.). The PCI bus coexists in the PC with the ISA or EISA bus. ISA and EISA boards still plug into an ISA or EISA slot, while high-speed. PCI controllers plug into a PCI slot, The PCI bus runs at 25, 30 or 33MHz, supports 32-bit and 64-bit data paths and bus mastering. The first PCs with PCI buses became available toward the end of 1993.

Port:

Ports are used to connect peripheral devices such as external drives and printers to your computer.

RAM (Random Access Memory):

The memory used to execute applications while your computer is turned ON. When you turn your computer OFF, all data stored in RAM is lost.

Real-Time Clock (RTC):

A CMOS counter used to maintain local time.

Retaining Bracket:

The bracket on the end of the board that attaches to the back of the chassis and contains connectors, usually keyboard, mouse, serial port, and/or parallel port.

Serial Port:

A two channel port, one channel used for “In” transmissions and one for “Out” transmissions.

SCSI (Small Computer System Interface):

A high speed, general purpose interface to storage devices.

SRAM(Static Random Access Memory):

As opposed to DRAM, this memory does not need to be refreshed by a controller and holds its information as long as the power is on.

Tag Comparator:

A memory that tells whether an address is available in the cache.

Wait State:

Extra time inserted to allow access to slower devices (e.g. DRAM) or EPROMs.

Write-Back Cache:

The process where the CPU updates the cache and the DRAM simultaneously but does not wait for the DRAM to complete the update.

Write-Thru Cache:

The process where the CPU updates the cache and the DRAM simultaneously but the CPU waits for the DRAM to complete the update, resulting in more time being consumed than in write-back.

User's Notes

MN - PR747-02