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Contents

Chapter 1
Introduction

The **TX PRO** mainboard is a high-performance mainboard based on the advanced Pentium™ microprocessor and featuring PCI Local Bus and the TX PRO chipset. The mainboard offers a high degree of flexibility in configuration and is fully IBM PC/AT compatible.

Key Features

The advanced features of the TX PRO mainboard include:

- TX PRO PENTIUM PCI chipset

- Supports PENTIUM™ 75 ~ 233 MHz CPUs at 60/66/75/83.3 MHz external clock speed with the PCI clock which is divided by 2 or 2.5, a figure which meets the PCI clock specification

- Supports Pentium™ P54C and P55C (MMX™), Cyrix/IBM 6x86, 6x86L, M2, IDT C6, and AMD K5/K6 CPUs

- Supports Write Allocation feature for AMD K6; Linear Wrap Mode for Cyrix M1, M2; Error Checking & Correction (ECC) and Parity for DRAM

- Supports 64M-bit (16Mx4, 8Mx8, 4Mx16) technology DRAM/SDRAM

- Provides 4 x 72-pin SIMM modules auto banking in multiple configuration up to 256MB; 2 x 168-pin DIMM to support SDRAM/EDO DRAM/Page Mode DRAM

- Suports single piece of SIMM working capability

- Supports "Table Free" configuration so that DIMM and SIMM can be installed in any combinations up to 384MB of system, excepts that SIMM1, 2 and DIMM2 can not be installed at the same time

- Supports onboard 512KB Pipelined Burst synchronous L2 cache

- Supports Ultra DMA/33 and ACPI

- Provides DALLAS Real Time Clock

- Switching power provides CPU core voltage from 2.5V to 3.5V

- 4 PCI Local Bus slots and 4 x 16 bits ISA Bus slots, all 4 PCI slots support master mode

- Onboard PCI Bus Master IDE interface supports 4 IDE devices with 2 channels; BIOS supports 4 IDE harddisk drives which do not need device driver for S/W application and the capacity of each harddisk can be larger than 528MB and up to 8.4 GB

- PCI IDE Controller supports Ultra DMA/33 at maximum transfer rate of 33 MB/s and Bus Master IDE DMA Mode 2

- Onboard super Multi-I/O chip supports 2 serial ports with 16550 fast UART compatible, 1 parallel port with EPP and ECP capabilities, and one floppy disk drive interface

- Supports PS/2 Mouse connector and the Universal Serial Bus interface

- BIOS supports NCR810 SCSI BIOS firmware and Green feature function, and "Plug & Play" Flash ROM

Static Electricity Precautions

Static electricity can easily damage your TX PRO mainboard. Following procedures can help you to protect your mainboard from electrostatic discharge:

1. Keep the mainboard and other system components in their antistatic packaging until you are ready to install them.

2. Ground yourself before removing any system component from its protective anti-static packaging. A grounded surface within easy reach is the expansion slot covers at the rear of the system case or any other unpainted portion of the system chassis.

3. Frequently ground yourself to discharge any static electric charge that may build up in your body while working on installation and/or configuration.

4. Handle the mainboard by its edges or by the mounting bracket to avoid touching its components.

Unpacking the Mainboard

The TX PRO Mainboard package contains the following items:

1. The TX PRO Mainboard

2. This User's Guide

Note: Do not remove the mainboard from its original package until you are ready to install it.

The TX PRO mainboard is easily damaged by static electricity. Follow the precautions below while unpacking or installing the mainboard.

1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.

2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.

3. Check the mainboard for damage. If any integrated circuit appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Chapter 2
Hardware Configuration

Before you install the **TX PRO** mainboard into the system chassis, you may find it convenient to first configure the mainboard's hardware. This chapter describes how to set jumpers and install memory modules, and where to attach components.
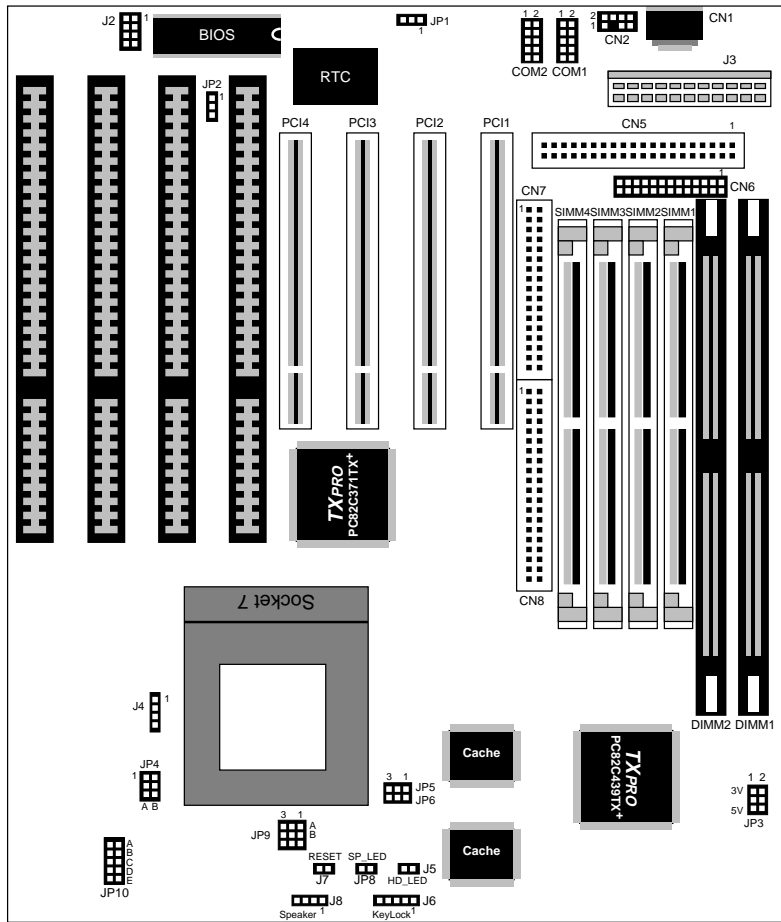
Mainboard Component Locations

Figure 2–1. Mainboard Component Locations

Connectors

Attach system components and case devices to the mainboard via the mainboard connectors. A description of each connector and its connector pins follows. See Figure 2–1 for the location of the connectors on the mainboard.

Note: Make sure that the power is turned off before making any connection to the board.

J3 (Power Conn.) – Power Supply Connectors

The power supply connectors are two six-pin male header connectors. Plug the dual connectors from the power directly onto the board connectors. Most of power supply have two leads and each lead has six wires. Two of which are black, orient the connectors so that the black wires are in the middle.

Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	–5V DC
4	–12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

COM1/2 – Serial Port #1/#2

CN5 – Floppy Disk Port

CN6 – Parallel Port

CN8/CN7 – Primary/Secondary IDE Ports

CN1 – Keyboard Connector

A standard 5-pin female DIN keyboard connector is located at the rear of the board CN1.

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	N.C.
4	Ground
5	+5V DC

J2 – Universal Serial Bus (USB) Connector

J2		J2	
Pin	Description	Pin	Description
1	+5 VDC	2	+5 VDC
3	Data –	4	Data –
5	Data +	6	Data +
7	Ground	8	Ground

J5 (HDD-LED) – HDD LED Connector

Pin	Description
+	+5V
–	Active Low

J7 (RESET) – Reset Switch Connector

Attach the Reset push button cable to this connector.

Setting	Description
Open	Normal Mode
Close	Reset System

JP1 – CMOS RAM Discharge Selector

Setting	Description
Normal Mode	1
Clear CMOS	1

J8 (Speaker) – Speaker Connector

Attach the system speaker to connector J8 (speaker).

Pin	Description
1	Data Out
2	N.C.
3	Ground
4	+5V

J6 (KEY LOCK) – Keylock & Power LED Connector

J6 (KEY LOCK) is a keylock connector that enables and disables the keyboard key-in function on the case.

Pin	Description
1	LED Output
2	N.C.
3	Ground
4	Keylock
5	Ground

JP3– DIMM Socket Voltage Selectors

Voltage Selectors	Setting
5V	5V 3V
3.3V	5V 3V
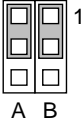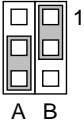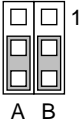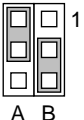
Note: For all synchronous DRAM, JP3 must be set to 3.3V position.

JP5, JP6 – CPU External Clock Selectors
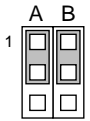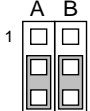
The mainboard has a clock generator that lets you choose the CPU frequency by setting jumpers JP5 and JP6. You can set the CPU External Clock from 60MHz to 83.3 MHz as shown below.

External Clock	JP5, 6, Settings	External Clock	JP5, 6, Settings
60MHz		75MHz	
66MHz		83MHz	

JP9A, B – CPU Internal Clock Speed Selectors

IDT	Intel	Cyrix	AMD	JP9
Reserved	1.5X 3.5X	Reserved	K5 1.5X/ K6 3.5X	
Reserved	2.0X	2.0X	Reserved	
Reserved	2.5X	M2 2.5X	2.5X	
C6 3.0X	3.0X	M2 3.0X	K6 3.0X	
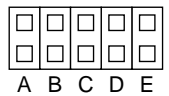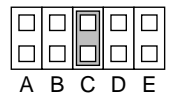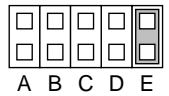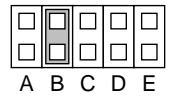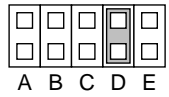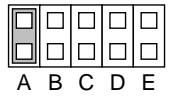
JP4 – CPU Type Selector

CPU	Settings	Example
P54C (Single Voltage)	A B	Intel P54C, AMD K5, IBM/Cyrix 6x86, IDT C6
P55C (Dual Voltage)	A B	Intel MMX™, AMD K6, IBM/Cyrix 6x86L/6x86MX(M2)

CN2 – PS/2 Mouse Connector

Pin	Pin Connector
1	Mouse CLK
2	Ground
3	N.C.
4	Mouse Data
5	N.C.
6	N.C.
7	N.C.
8	+5VDC

JP10 – CPU Core Voltage Selectors

Core Vcc	JP10	Core Vcc	JP10
2.5V	A B C D E	3.2V	A B C D E
2.8V	A B C D E	3.3V	A B C D E
2.9V	A B C D E	3.5V	A B C D E

JP8 (SP_LED) – Turbo LED Connector

Pin	Description
+	Anode
–	Ground

J4 – Fan Power

Pin	Description
1	+12V
2	Ground
3	Ground
4	+5V

Memory Installation

The mainboard lets you add up to 384MB of system memory through SIMM and DIMM sockets on the board. Four SIMM sockets on the mainboard are divided into two banks: Bank 0 and Bank 1. Each bank consists of two 72-pin SIMM modules. The mainboard supports the following memory configurations and DIMM sockets consist of two 168-pin DIMM modules.

SIMM 1&2	SIMM 3&4	DIMM2	DIMM1	Total Memory
4MB x 2	None	None	None	8MB
8MB x 2	None	None	None	16MB
16MB x 2	None	None	None	32MB
32MB x 2	None	None	None	64MB
None	None	None	8MB	8MB
None	None	None	16MB	16MB
None	None	None	32MB	32MB
None	None	None	64MB	64MB
4MB x 2	4MB x 2	None	None	16MB
8MB x 2	8MB x 2	None	None	32MB
16MB x 2	16MB x 2	None	None	64MB
32MB x 2	32MB x 2	None	None	128MB
None	None	8MB	8MB	16MB
None	None	16MB	16MB	32MB
None	None	32MB	32MB	64MB
None	None	64MB	64MB	128MB
4MB x 2	None	None	8MB	16MB
8MB x 2	None	None	16MB	32MB
16MB x 2	None	None	32MB	64MB
32MB x 2	None	None	64MB	128MB
8MB x 2	None	None	8MB	24MB
8MB x 2	None	None	16MB	32MB
8MB x 2	None	None	32MB	48MB
8MB x 2	None	None	64MB	80MB
16MB x 2	4MB x 2	None	None	40MB
16MB x 2	8MB x 2	None	None	48MB
16MB x 2	16MB x 2	None	None	64MB
16MB x 2	32MB x 2	None	None	96MB

SIMM 1&2	SIMM 3&4	DIMM2	DIMM1	Total Memory
16MB x 2	None	None	8MB	40MB
16MB x 2	None	None	16MB	48MB
16MB x 2	None	None	32MB	64MB
16MB x 2	None	None	64MB	96MB
32MB x 2	4MB x 2	None	None	72MB
32MB x 2	8MB x 2	None	None	80MB
32MB x 2	16MB x 2	None	None	96MB
32MB x 2	32MB x 2	None	None	128MB
32MB x 2	None	None	8MB	72MB
32MB x 2	None	None	16MB	80MB
32MB x 2	None	None	32MB	96MB
32MB x 2	None	None	64MB	128MB
None	32MB x 2	8MB	8MB	80MB
None	32MB x 2	16MB	16MB	96MB
None	32MB x 2	32MB	32MB	128MB
None	32MB x 2	64MB	64MB	192MB
64MB x 2	None	None	8MB	136MB
64MB x 2	None	None	16MB	144MB
64MB x 2	None	None	32MB	160MB
64MB x 2	None	None	64MB	192MB
64MB x 2	4MB x 2	None	None	136MB
64MB x 2	8MB x 2	None	None	144MB
64MB x 2	16MB x 2	None	None	160MB
64MB x 2	32MB x 2	None	None	192MB
None	64MB x 2	8MB	8MB	144MB
None	64MB x 2	16MB	16MB	160MB
None	64MB x 2	32MB	32MB	192MB
None	64MB x 2	64MB	64MB	256MB

SIMM 1&2	SIMM 3&4	DIMM2	DIMM1	Total Memory
128MB x 2	None	None	8MB	264MB
128MB x 2	None	None	16MB	272MB
128MB x 2	None	None	32MB	288MB
128MB x 2	None	None	64MB	320MB
128MB x 2	4MB x 2	None	None	264MB
128MB x 2	8MB x 2	None	None	272MB
128MB x 2	16MB x 2	None	None	288MB
128MB x 2	32MB x 2	None	None	320MB
None	128MB x 2	8MB	8MB	272MB
None	128MB x 2	16MB	16MB	288MB
None	128MB x 2	32MB	32MB	320MB
None	128MB x 2	64MB	64MB	384MB

Notes: 1. *Bank 0 (SIMM 1 & 2) and DIMM2 these two types of DRAM module can not be used at the same time.*

2. *The speed of all SIMMs and DIMM modules have to be faster than 70ns.*

3. *Use 2 DRAM types: Fast Page Mode or Extend DATA Out (EDO) for SIMM socket.*

4. *Use 3 DRAM types: Fast Page Mode, Extend Data Out (EDO), or synchronous DRAM (SDRAM) for DIMM socket.*

Chapter 3
BIOS Setup

This chapter explains how to configure the mainboard's BIOS setup program. The setup program provided with the **TX PRO** mainboard is the BIOS from AMI Software Inc.

After you have configured the mainboard and have assembled the components, turn on the computer and run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming. You use the BIOS setup program to tell the operating system what type of devices are connected to your system board.

The system setup is also called CMOS setup. Normally, you need to run system setup if either the hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

Entering WinBIOS Setup

To enter the WinBIOS Setup program:

1. Turn on or reboot the system. A screen appears with a series of diagnostic checks.

2. When "Hit <DEL> if you want to run SETUP" appears, press the <DEL> key to enter the BIOS setup program. The following screen appears:
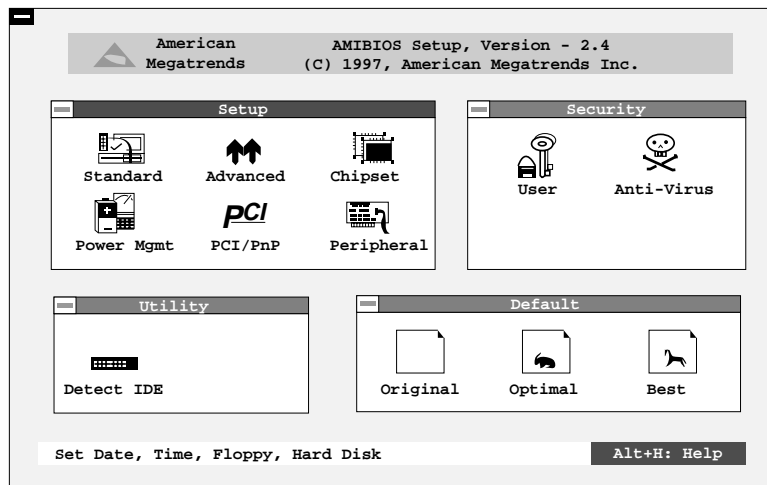
3. Use your keyboard or mouse to choose options. Modify system parameters to reflect system options. Press Alt-H for Help.

Default

Every option in AMIBIOS Setup contains three default values: Original default, Best default, and the Optimal default value.

Original: The original default values recover the modified settings to the original values.

Best: The Best default values provide best performance settings for all devices and system features, but dependent used devices and we aren't guaranty that system run overnight on these settings.

Optimal: The Optimal default values provide optimum system settings for all devices and system features.

Setup Window

The Setup window has six icons that allow you to set system configuration options.
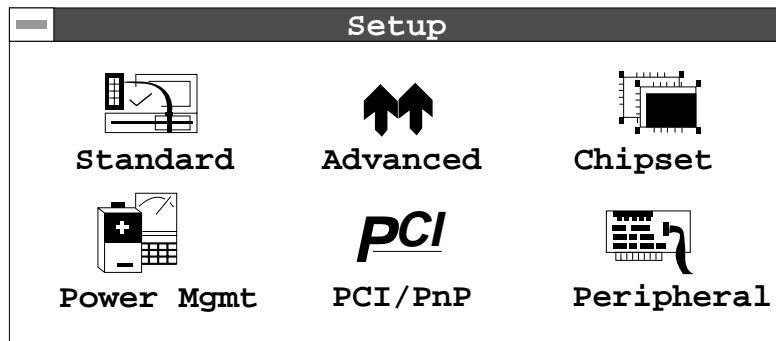
Standard Setup

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

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 360KB $5^1/_4$", 1.2MB $5^1/_4$", 720KB $3^1/_2$", 1.44MB $3^1/_2$", or 2.88MB $3^1/_2$".

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 IDE Drives   Choose the **Type** parameter and select Auto AMIBIOS automatically detects the IDE drive parameters and displays them.
Choose on **LBA/Large Mode** and choose *On* to enable support for IDE drives with capacities greater than 528MB.
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.

Advanced Setup

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

1st Boot Device **2nd Boot Device** **3rd Boot Device** **4th Boot Device**	Set these options to select the boot sequence from different booting devices.
S.M.A.R.T for Hard Disks	Select this option to enable or disable the S.M.A.R.T. function of HDDs.
Quick Boot	Set this option to *Enabled* to permit AMIBIOS to boot within 5 seconds.
Boot Up Num-Lock	When this option is set to *On*, AMIBIOS turns off the *Num Lock* key when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard.
Floppy Drive Swap	Set this option to *Enabled* to specify that floppy drives A: and B: are swapped.
PS/2 Mouse Support	When this option is set to *Enabled*, AMIBIOS supports a PS/2-type mouse.
Primary Display	This option configures the primary display subsystem in the computer. The settings are *Mono* (*monochrome*), *40CGA*, *80CGA*, or *VGA/EGA*.

Password Check   This option specifies the type of AMIBIOS
                        password protection that is implemented.
                        The settings are:
                        Setup: The password prompt appears
                                  only when an end user attempts
                                  to run WINBIOS Setup.
                        Always: A password prompt appears
                                  every time the computer is
                                  powered on or rebooted.
                        The AMIBIOS password does not have to
                        be enabled. The end user sets the
                        password by choosing the Password icon
                        on the WINBIOS Setup screen.

Internal Cache   This option selects to enable the internal
                        cache or not.

External Cache   This option selects to enable External
                        Cache or not.

System BIOS   AMIBIOS always copies the system BIOS
Cacheable   from ROM to RAM for faster execution.
                        Set this option to *Enabled* to permit the
                        contents of the F0000h RAM memory
                        segment to be written to and read from
                        cache memory.

Video BIOS Shadow;	Disabled:	The specified ROM is not copied to RAM.
C800, 16K Shadow;	Enabled:	The contents of the ROM area
CC00, 16K Shadow;		are not only copied from ROM
D000, 16K Shadow;		to RAM for faster execution, the
D400, 16K Shadow;		contents of the RAM area can
D800, 16K Shadow;		be written to or read from cache
DC00, 16K Shadow		memory.
	Cached:	The contents of the ROM area are copied from ROM to RAM for faster execution.

Chipset Setup

Choose the Chipset Setup icon from the Setup section on the AMIBIOS Setup main menu. All Chipset Setup options are then displayed and are described in the following section:

USB Function for DOS	Set this option to enable the system BIOS USB (Universal Serial Bus) functions.
DRAM Write Timing	Set this option to select the proper DRAM Write Timing.
Page Mode DRAM Read Timing	Set this option to select the proper Page Mode DRAM Read Timing.
RAS Precharge Period	Set to select the RAS Precharge Period.
RAS to CAS Delay Time	Set to select the Delay Time of RAS to CAS.
EDO DRAM Read Timing	Set this option to select the proper EDO DRAM Read Timing.

DRAM Speculative Read Set to enable the DRAM Speculative Read.

SDRAM CAS Latency Set this select the SDRAM CAS Latency.

SDRAM Timing Set to select the SDRAM Timing.

SDRAM Speculative Read Set to enable the SDRAM Speculative Read.

Pipe Function Set to enable the Pipe Function.

Slow Refresh Set to select the Slow Refresh.

DRAM Data Integrity Mode Set to select the DRAM Data Integrity Mode.

Primary Frame Buffer Set to select the Primary Frame Buffer.

VGA Frame Buffer Set to enable the VGA Frame Buffer.

Passive Release Set to enable the Passive Release.

ISA Line Buffer Set to enable the ISA Line Buffer.

Delay Transaction Set to enable the Delay Transaction.

AT Bus Clock Set to select the AT Bus Clock.

Power Management Setup

The AMIBIOS Setup options described in this section are selected by choosing the Power Management Setup icon from the Setup section on the AMIBIOS Setup main menu.

Power Management/ APM	Set this option to enable power management features and APM (Advanced Power Management).
Green PC Monitor Power State	This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power savings state after the specified period of display inactivity has expired.
Video Power Down Mode	This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired.
Hard Disk Power Down Mode	This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired.
Standby Time out (Minute)	This option specified the length of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state.
Suspend Time out (Minute)	This option specified the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state.
Monitor Parallel Port; Monitor serial Port; Monitor Floppy; Monitor VGA; Monitor Audio; Monitor Pri-HDD; Monitor Sec-HDD	When set to *Monitor*, these options enable event monitoring on the specified hardware interrupt request line. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

PCI/PnP Setup

Choose the PCI/PnP Setup icon from the WINBIOS
Setup screen to display the PCI and Plug and Play
Setup options, described below.

onBoard USB   Set this option to enable USB function on
                        Chipset.

PCI Latency Timer   This option specifies the latency timings (in
(PCI Clocks)   PCI clocks) for all PCI devices on the PCI bus.

PCI VGA Palette   When this option is set to Enabled, multiple
Snoop   VGA devices operating on different buses can
                        handle data from the CPU on each set of
                        palette registers on every video device. Bit 5
                        of the command register in the PCI device
                        configuration space is the VGA Palette Snoop
                        bit (0 is disabled).

PCI IDE Bus   Set this option to *Enabled* to specify that the
Master   IDE controller on the PCI local bus includes a
                        bus mastering capability.

Offboard PCI IDE   This option specifies if an offboard PCI IDE
Card   controller adapter card is installed in the
                        computer. You must specify the PCI
                        expansion slot on the motherboard where the
                        offboard PCI IDE controller is installed. If an
                        offboard PCI IDE controller is used, the
                        onboard IDE controller is automatically
                        disabled. If an offboard PCI IDE controller
                        adapter card is installed in the computer, you
                        must also set the **Offboard PCI IDE Primary
                        IRQ** and **Offboard PCI IDE Secondary IRQ**
                        options.

Offboard PCI IDE Primary IRQ; Offboard PCI IDE Secondary IRQ These options specify the PCI interrupt used by the Primary (or secondary) IDE channel on the offboard PCI IDE controller.

Assign IRQ to PCI VGA Card Set this option to *Enabled* to assign IRQ to PCI VGA Card.

PCI Slot 1 IRQ Priority; PCI Slot 2 IRQ Priority; PCI Slot 3 IRQ Priority; PCI Slot 4 IRQ Priority These options specify the priority IRQ to be used for any PCI devices installed in PCI expansion slots 1 through 4.

DMA Channel 0, 1, 3, 5, 6, 7 These options specify the bus that the specified DMA channel is used on.

IRQ3, 4, 5, 7, 9, 10, 11, 12, 14, 15 These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

Peripheral Setup

Choose the Peripheral Setup icon from the WINBIOS Setup screen to display the Peripheral Setup options, described below.

Onboard FDC This option enables the FDC (Floppy Drive Controller) on the motherboard.

Onboard Serial Port1 This option specifies the base I/O port address of serial port 1.

Onboard Serial Port2   This option specifies the base I/O port address of serial port 2.

Onboard Parallel Port   This option specifies the base I/O port address of the parallel port on the motherboard.

Parallel Port Mode   This option specifies the parallel port mode.

Normal: The normal parallel port mode is used.

EPP: The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.

ECP   The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 MB per second. ECP provides symmetric bidirectional communication.

Parallel Port DMA Channel   This option is only available if the setting of the Parallel Port Mode option is ECP.

Onboard IDE   This option specifies the channel used by the IDE controller on the motherboard.