PM-9700

PENTIUM® 90MHz to 233MHz
AGP & On-Board 16bit Sound
PCI, Ultra DMA/33 & High Speed Multi I/O
TX4 AGP Chipset System Board

Amptron®

TX4™ AGP

symbol of value!™

User's Guide
Revision 1.0

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CPUs SUPPORTED
•Intel® Pentium® P54C (90MHz to 200MHz)
•Intel® Pentium® with MMX™ Technology P55C (166MHz to 233MHz)
•Cyrix®/IBM® 6x86MX (PR166 to PR233) *
•Cyrix®/IBM® 6x86L (PR166+ & PR200+) *
•Cyrix®/IBM® 6x86 (PR120+ to PR200+) *
•AMD™ K6 (PR2-166 to PR2-233)
•AMD™ K5 (PR75 to PR166)
•IDT WinChip C6™ (200MHz)
•High Performance TX4 AGP Chipset
•Jumperless CPU "Plug and Play" function for faster and easier CPU installation

MEMORY
•Up to 640MB of main memory in 4 (2 banks) auto banking 72-pin SIMM slots for Fast Page Mode or EDO DRAM, and 2 168-pin DIMM sockets for SDRAM, Fast Page Mode DRAM, or EDO DRAM modules.
•Supports 64M-bit (16M X 4, 8M X 8, 4M X 16) technology DRAM/SDRAM

CACHE
•On-Board 1024KB Pipeline Burst L2 Cache
•Up to 128MB Cacheable Main Memory Size

ENHANCED IDE CONTROLLER
•Two PCI EIDE Interfaces for up to four EIDE devices in two channels. Individually supports PIO Mode 0 to 4 and Ultra DMA/33 for all four devices - all four devices may have different PIO modes and performance will be optimized for each device

ON-BOARD SOUND
•SB 16/PRO compatible with DirectSound 3D support
•HRTF 3D Positional Audio Technology with full duplex stereo
•Supports 44.1K digital audio-in (SPDIF)
•Windows 95/3.1 and MS-DOS supported by drivers

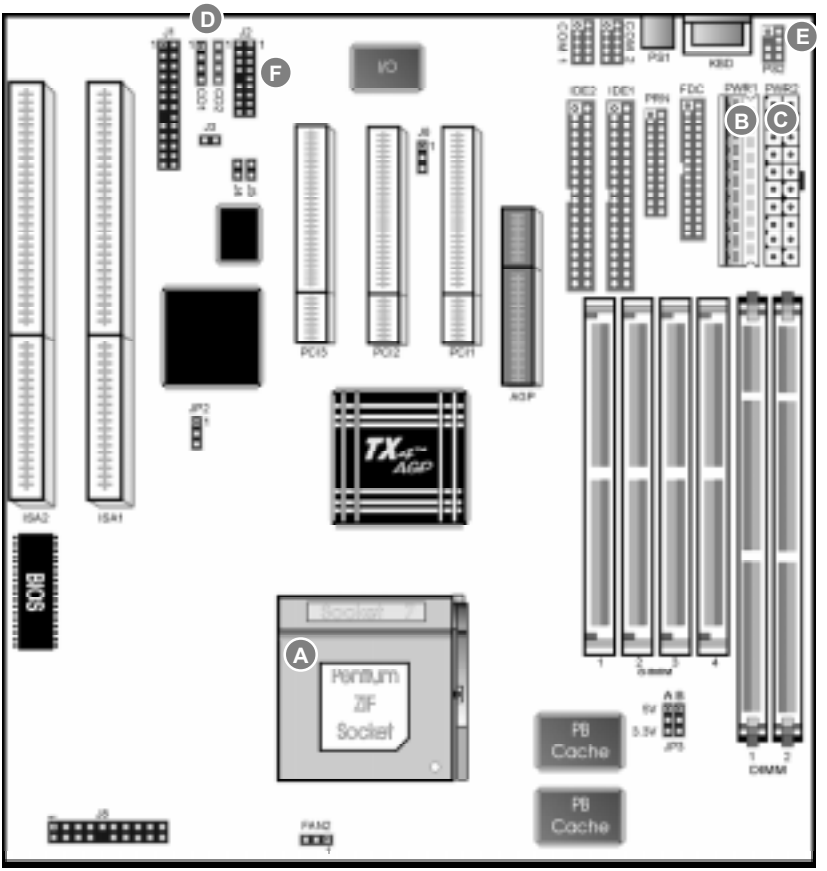
BUS ARCHITECTURE
•One 66 MHz AGP Slot (Accelerated Graphics Port)
•Three 32-bit PCI Local Bus Slots with Master Mode
•Two 16-bit ISA Bus Slots

ON-BOARD I/O CONTROLLER
•Two 16550 Fast Serial Ports
•One SPP, EPP & ECP Mode Capable Parallel Port
•One High Speed Floppy Drive Connector
(Supports 2.88MB floppy drives & 1Mb/sec floppy transfer rates)
•One PS/2-type Mouse Header
•Optional ATX Form Card with USB, IR & PS/2 mouse connectors

POWER MANAGEMENT FEATURES
•SMM/SMI Power Management with APM Software Interface - Monitor CPU and I/O status with fully user configurable parameters in BIOS
•Supports following ATX power functions: Power Switch, Modem Ring-On, RTC Soft-On
•Advanced Configuration Power Interface

BIOS FEATURES
•AMI "Plug and Play" Flash ROM for easy BIOS upgrades

***DUE TO THE "ABOVE INDUSTRY STANDARD" 75MHZ CPU BUS SPEED (37.5 MHZ PCI BUS SPEED) REQUIRED BY THE IBM/CYRIX PR200+/PR233MX CPUS, CAUSING TIMING DIFFICULTIES WITH THE PCI BUS (33 MHZ STANDARD) AND THE MEMORY SUB-SYSTEMS, IT IS POSSIBLE THAT THESE PROCESSORS MAY CAUSE SYSTEM CRASH OR OTHER ABNORMALITIES. OUR TEST HAD SHOWN THAT MOST OF OUR BOARDS CAN ACCOMMONDATE THESE PROCESSORS WITHOUT ANY PROBLEM, HOWEVER, USING THESES PROCESSORS IS CONSIDERED ON A "AT-YOUR-OWN-RISK" BASIS.**

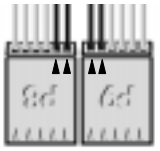


A ZIF SOCKET

Plug the processor into this socket. Make sure the cpu is correctly aligned before you insert it.

B AT POWER SUPPLY CONNECTOR

Plug the dual connectors from the power supply directly into the board connectors. On most power supplies, you must orient the black (ground) wires such that all the black wires on both connectors are in the middle.



C ATX POWER SUPPLY CONNECTOR

Plug the single 20 pin connector into the board connector. It should only fit in one direction.

D SOUND PRO & GAME CONNECTORS

Plug a standard 5-pin female DIN keyboard connector into this port.

E PS/2 MOUSE HEADER

Plug a PS/2 mouse connector plug into this header.

F ATX FORM CARD HEADER

An optional bracket with USB, PS/2 mouse & infrared plugs into here.

BE SURE YOU KNOW WHAT YOU ARE DOING!

•It's easy to get overly excited about your purchase, and to jump right into installing the system board into your case. Too many times, people fail to read the manual or insist on installing it themselves, only to find out later that they've permanently damaged their motherboard and as well as their components. Though this manual will make installation seem like a fairly simple procedure, it is not. So, if you're not a technophile or have little or no computer knowledge, consider asking your vendor or a trained technician to install this board.

INSERT THE CPU INTO THE ZIF SOCKET

•Pull up the handle and insert the CPU with the dotted corner aligned with the corner of the ZIF socket that looks like its missing a pinhole. Plug it in and pull down on the handle.

INSTALL YOUR MEMORY INTO THE CORRECT SOCKETS

•Insert your memory into the corresponding DIMM or SIMM sockets. Follow the instructions outlined in the memory section of this manual.

INSTALL THE MAINBOARD ONTO THE SYSTEM CHASSIS

•Make sure the mainboard is properly grounded and mounted into the case. Take time to do this properly as it makes the installation of your cards and cables easier.

CONNECT AND INSTALL YOUR CARDS & I/O CABLES

•Be sure your cables and cards are properly oriented and plugged in firmly. See the helpful hint page for tips on connecting your i/o cables.

CONNECT YOUR CASE LED & SWITCH CABLES TO THE BOARD

CONNECT THE POWER SUPPLY CABLES TO THE BOARD

•See the mainboard diagram page for tips on connecting your power cables.

POWER ON AND GO INTO BIOS AND SETUP YOUR SYSTEM

•Press <del> during memory check phase of POST and see the BIOS setup pages of this manual for more details on setting up your system's configuration. If you get a blank screen, refer to the troubleshooting section for some tips on solving this problem.

CHECK THE CPU PNP SETTING IN BIOS TO CONFIGURE THE BOARD

•Make sure to check & double check your settings so that you don't prematurely burn out your CPU.

GET YOUR OPERATING SYSTEM UP AND RUNNING

•Bootup your OS and see if the board and all your peripherals are recognized and working.

USE THE ENCLOSED CD-ROM FOR IDE, USB, SOUND & AGP DRIVERS

•The drivers for these options of the motherboard can be found the following locations:
IDE - (CD-ROM LETTER):\Ide\M570\Win95
IDE - (CD-ROM LETTER):\Ide\M570\Win95
USB - (CD-ROM LETTER):\Usb
SOUND - (CD-ROM LETTER):\Sound\Soundpro\Driver
AGP- (CD-ROM LETTER):\Vga\M570agp\Setup
•If you have a *SIS 3DPro AGP card*, please install the driver from the following location:
(CD-ROM LETTER):\Vga\3dproagp
Select the proper driver directory according to your operating system

CD1 / CD2 - Analog Audio for Sony/Panasonic
COM 1/2 - Serial Port #1 & #2
FDC1 - Floppy Disk Port
IDE1 / IDE2 - Primary/Secondary IDE Ports
J4 - Digital Audio In
J5 - Digital Audio Out
KBD - Keyboard Connector
PRN1 - Parallel Port
PS2 - PS/2 Mouse Port Connector
PS1 - PS/2 Mouse Header Connector
PWR1 - AT Power Supply Connectors

FAN2 - Fan Power Connector

PIN	DESCRIPTION
1	Sense
2	+12V
3	Ground

J1 - Sound and Game Connectors

J2 - Optional ATX Form Card Bracket

PINS	DESCRIPTION
1	+5VDC (Dual USB Connector *Pins 1-8*)
2	+5VDC
3	DATA -
4	DATA -
5	DATA +
6	DATA +
7	Ground
8	Ground
9	+5VDC (PS/2 Mouse Connector *Pins 9,11,12,14*)
11	Mouse Clock
12	Mouse Data
14	Ground
13	Ground (Infrared Connector *Pins 13,15-18*)
15	IR Hi
16	IR In
17	+5VDC
18	IR Out

J3 - Microphone Type Connector

SETTING	DESCRIPTION
OPEN	Normal Mode
SHORT	Special Mode

J6 - Wake On LAN (ATX POWER ONLY)

PIN	DESCRIPTION
1	5V Stand By
2	Ground
3	Active High

J8 KEY/LOCK - Keylock & Power LED

PIN	DESCRIPTION
1	LED Output
3	Not Connected
5	Ground
7	Keylock
9	Ground

J8 SPK - Speaker Connector

PIN	DESCRIPTION
2	Data Out
4	Not Connected
6	Ground
8	+5V

J8 TB-LED - Turbo LED Connector

PIN	DESCRIPTION
13	(+) +5V
14	(-) Active Low

J8 HD-LED - HDD LED Connector

PIN	DESCRIPTION
15	(+) +5V
16	(-) Active Low

J8 RST - Reset Switch Connector

PIN	DESCRIPTION
17	Signal
18	Ground

J8 PW BT - ATX Suspend Switch

PIN	DESCRIPTION
19	Signal
20	Ground

(See page 11 for more detail)

JP2 - CMOS RAM Clear Selector

PIN	DESCRIPTION
1-2	Normal Mode (default)
2-3	Clear CMOS

JP3 - DIMM Voltage Selector

JP3A	JP3B	DESCRIPTION
1 - 2	1 - 2	5V
2 - 3	2 - 3	3.3V (default)

Sound Pro Connector

PIN	DESCRIPTION
CD1/CD2	Analog Audio (Sony/Panasonic Pinout) - Connect to CD-ROM
J1	Sound and Game Connectors (Line-In, Mic, Line-Out & Game)
J4	Digital Audio In
J5	Digital Audio Out

The jumperless CPU Plug and Play feature of the AMIBIOS allows for easy and automatic setup of the processor installed into the motherboard.

CPU BRAND / VC CORE VOLTAGE

•The CPU Brand and VC Core Voltage are selected by the BIOS and cannot be changed by the user.

CPU SPEED

•Select a correct CPU Speed to match your CPU.

CPU BASE FREQUENCY

•This option can't be changed by the user. Pick this option to show the base frequency.

CHANGING THE CPU SPEED

•If a wrong CPU speed is selected and the system doesn't run correctly, turn the power off and then press and hold down the <PageUp> key for more than 3 seconds while turning the system back on again. Go to the CMOS Setup section to select a proper CPU speed.

MEMORY INSTALLATION SETTINGS

BANK#	DESCRIPTION	MEMORY MODULE
0	SIMM1 & SIMM2 (72 PIN SIMM) OR DIMM2 (168 PIN DIMM)	2 X 4MB / 8MB / 16MB / 32MB / 64MB / 128MB OR 4MB / 8MB / 16MB / 32MB / 64MB / 128MB / 256MB
1	SIMM3 & SIMM4 (72 PIN SIMM)	2 X 4MB / 8MB / 16MB / 32MB / 64MB / 128MB
2	DIMM1 (168 PIN DIMM)	4MB / 8MB / 16MB / 32MB / 64MB / 128MB / 256MB

MEMORY CONSIDERATIONS

- The mainboard lets you add up to 640MB of system memory through 4 SIMM and 2 DIMM sockets on the board
- Four SIMM sockets on the mainboard are divided into two banks: BANK 0 & BANK 1.
- Two 168-pin DIMM sockets are divided into two banks: BANK 0 & BANK 2.
- The mainboard supports the above memory configurations but we do not recommend the mixed mode DRAM usage.
- You cannot install memory into SIMM1 & SIMM2 and DIMM2 sockets at the same time
- The speed of all SIMMs and DIMM modules have to be faster than 70ns
- Uses Fast Page Mode or Externded DATA Out (EDO) for the SIMM sockets
- Uses Fast Page Mode, Extended DATA Out (EDO) or Synchronous DRAM (SDRAM) for the DIMM sockets.

The functions that are described in the following will not be available unless the ATX power connector is being used.

PWR2 - ATX Power Supply Connector

PIN	DESCRIPTION
1	3.3V
2	3.3V
3	Ground
4	+5V
5	Ground
6	+5V
7	Ground
8	Power OK
9	5VSB
10	+12V
11	3.3V
12	-12V
13	Ground
14	PS-On
15	Ground
16	Ground
17	Ground
18	-5V
19	+5V
20	+5V

J8 (19-20) - ATX POWER BUTTON CONNECTOR

- Attach the ATX power button or suspend switch cable to this connector.
- When the system is off, push the power button to turn the system on.
- When the system is on, push the power button rapidly to switch the system to the Suspend mode and by pushing and holding the button for more than 4 seconds, it will turn the system completely off.
- When the system is in the Suspend mode, push the power button rapidly to turn the system on.
- In the AT power system, this connector will act as a suspend switch instead.

WINDOWS 95 SHUT DOWN

- If ATX Power is used, the “It is now safe to turn off your computer” message will not be shown when you are shutting down the computer.

MODEM RING POWER-ON

- While in soft-off/suspend state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed.
- Make sure that the Resume On Ring option is set to ENABLED in the BIOS.

ALARM WAKE UP

- If you want to autoboot the system at a certain time, set the function of the RTC Alarm time properly and the function of RTC Alarm Resume From Soft Off option in the BIOS Setup section will be set to ENABLED.

KEYBOARD POWER ON

- Press the Hot key <Ctrl+Alt+Backspace> to power on the system when the Keyboard Power On option is set to ENABLED in the BIOS Setup section.

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

WARNING

- Due to the frequent upgrades of the AMI WINBIOS, this manual may not include descriptions of all the features available to you in your current BIOS.
- Do not change the settings in the BIOS unless you know EXACTLY what you are doing or when told to do so by a trained technician. Changing any of the BIOS settings, may affect the performance of your system and can also cause your system to hang.

INSTALLING A NEW BIOS

- When installing a new BIOS into this mainboard, JP2 must be set to the clear CMOS position for a moment. Replace the jumper back to the normal position before flashing the bios. You can also hold down the <END> key and then power on to clear the CMOS.

ENTERING THE WINBIOS SETUP

- When the computer is POSTing during bootup (going through a series of diagnostic checks), hit the <DEL> key when prompted to enter the BIOS setup screen.

DEFAULT SETTINGS

- There are three default values for the BIOS:

Original - The original default values revert the modified settngs to the original values.
Optimal - The optimal default values provide the optimum settings for all devices and system features.
Best Performance - The best default values provide the best performance settings for all devices and system features but it may cause your system to be unstable.

PRIMARY MASTER & SLAVE, SECONDARY MASTER & 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, 32-bit Mode and PIO Mode. All parameters relate to IDE drives except Type

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 $3^1/_2$".

1ST, 2ND, 3RD, 4TH BOOT DEVICE

•Set these options to select the boot sequence from different booting devices.

QUICK BOOT

•When this option is set to ENABLED, the BIOS skips many of the POST diagnostic steps so that bootup is faster.

PS/2 MOUSE SUPPORT

•When this option is set to ENABLED, the BIOS supports a PS/2 type mouse.

PASSWORD CHECK

•This option specifies the type of BIOS password protection that is implemented. The settings are:

Setup - The password prompt appears only when an enduser attempts to run BIOS setup.
Always - A password prompt appears every time the computer is powered on or rebooted.

•The BIOS password does not have to be enabled. The enduser sets the password by choosing the password icon on the BIOS setup screen.

INTERNAL CACHE

•Set this option to ENABLED to enable the internal CPU cache.

EXTERNAL CACHE

•Set this option to ENABLED to enable the external L2 cache.

DRAM AUTO CONFIGURATION

•Set this option to enable the auto configuration of DRAM timing and refresh cycle time.

EDO/FPM SPEED / SDRAM SPEED

•Set these options to select the proper DRAM speed.

ECC SUPPORT

•Set this option to enable or disable the ECC memory support.

USB FUNCTION

•Set this option to ENABLED to enable the system BIOS USB functions.

USB KEYBOARD/MOUSE SUPPORT

•Set this option to ENABLED to enable passive release on the USB.

KEYBOARD POWER ON

•This option is designed for when using ATX Power only. Use the Hot key <Ctrl+Alt+Backspace> to power on the system.

POWER MANAGEMENT/APM
•Set this option to ENABLED to enable power management and APM features.

GREEN PC MONITOR POWER STATES
•This option specifies the power state that the green PC compliant video monitor enters when BIOS places it in a power saving 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.

PLUG AND PLAY AWARE OS
•Set this option to YES if the operating system in this computer is PnP-aware.

OFFBOARD PCI IDE CARD
•This option specifies if an offboard PCI IDE 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. This disables the onboard PCI IDE controller. You must also specify the IRQs for this PCI IDE card.

ASSIGN IRQ TO PCI VGA CARD
•Some VGA cards require an IRQ to be assigned to them. Check your VGA card manual.

PCI SLOT 1/2/3 IRQ PRIORITY
•These options specify the priority IRQ to be used for any PCI devices installed in PCI expansion slots 1 through 3.

IRQ 4, 5, 7, 9, 10, 11, 12, 14, 15
•These options allow you to reserve IRQs for legacy (non-PnP) ISA adapter cards.

ONBOARD FDC
•This option allows you to enabled the floppy drive controller on the motherboard.

ONBOARD SERIAL PORT 1 & 2
•This option specifies the base I/O port address of serial port 1 & 2

ONBOARD PARALLEL PORT, MODE, & IRQ
•This option specifies the base I/O port address, type (Normal, Bi-Dir, EPP or EPP/ECP), and IRQ of the parallel port on the motherboard.

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

ONBOARD SOUND PRO
•Set this option to enable the Sound Pro functions of the motherboard.

WHAT TO DO FIRST...

•The most overlooked and common problems are actually the easiest to solve. Even if you are the most seasoned of all computer technophiles and you can tell Bill Gates a thing or two, make sure you double check the following three most frequently repeated mistakes:

(1) The power cable is not plugged firmly into the power supply in the back of the computer. Or the motherboard is not connected to the power supply.

(2) You've got ide, floppy, serial, parallel, scsi cables that are either not plugged in firmly into the respective ports or they are plugged in "backwards."

(3) Your jumpers for the cpu bus speed, clock multiplier, or voltage are not properly configured.

IF YOU STILL ARE HAVING PROBLEMS...

•The best way to solve any of your computer problems is to "start all over again." You've probably accumulated many peripherals every since you've got your computer. So basically remove all your cards except for the video card and your hard drive controller (if you have a SCSI hard drive or if you don't have an on-board i/o controller) and reboot your system.

•If you still get error messages after this reboot, try booting in "safe" mode per Windows 95 or try configurating your system with the most basic drivers i.e. vga instead of svga etc. If your problem is resolved, then it is most likely not a motherboard problem and the source of the crashes is due to one of your cards. See the next paragraph for suggestions on how to solve these problems. If the problem is not resolved then check your bios and reset the CMOS to factory defaults. You do this by hitting the specific hotkey (del or some other key prompted for when you boot up) during the memory check period of "bootup." Then select the function of resetting CMOS to factory defaults. Exit, save changes, and it will reboot. Other things that you can try if this doesn't help is to check the configuration of the motherboard and making sure the jumpers correctly match the components you've put on it i.e. cpu type and clock speed, type and size of cache etc. check your manual for what the correct jumper settings are. You can also check your memory, by booting your system with the minimal number of memory chips (1 for 486/5x86, 2 for Pentiums) and rotating them and rebooting after each rotation to see if you can successfully restart your system. You can also try turning off your external cache via your bios and seeing if that is the problem.

•Basically, the best technique for troubleshooting is to change one setting and then rebooting, until you can get it to work.

•Once you're at this step you need to place one of your other cards in, one at a time and reboot after each installation of the card and its specific drivers. Do this until all your cards are in or until your system crashes or freezes again. If it crashes, then you will know that it has to do with that card. So "start all over again" by taking out all cards except for the video card and your hard drive controller and placing that particular card with the problem into your system. If it works then, it is probably a compatibility or configuration problem between two or more of your cards, so go back and check their IRQs, DMAs, I/O addresses, and make sure to contact the manufacturer for the latest drivers and ask for their tech support.

•Most problems with your computer can be traced to factors other than your motherboard and it is simply a matter of getting the right drivers or configurations from your peripheral manufacturer and you'll be on the right track in no time.

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