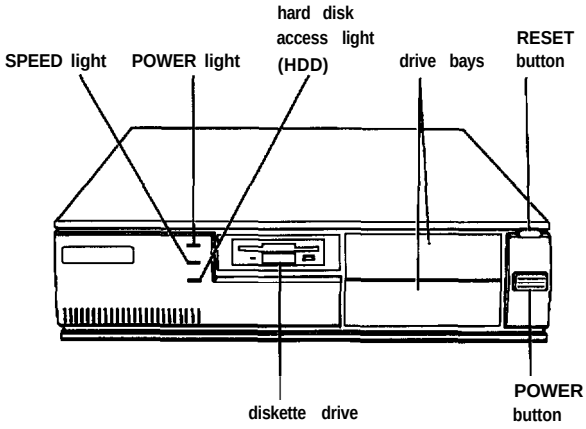
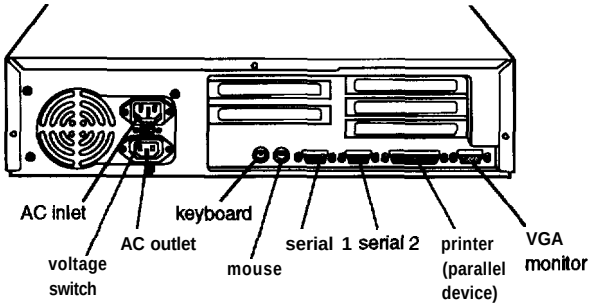
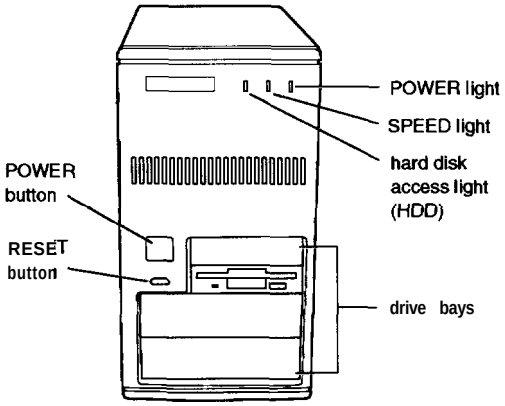
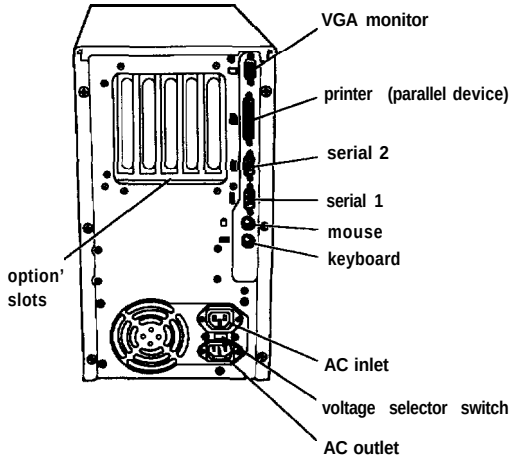








Computer Specifications

CPU and Memory

32-bit CPU	586 or upgradable 486-class processor
Green PC energy saver	Energy Star compliant, low-power standby, doze, and suspend modes for the CPU, hard disk drive, and video signals sent by the computer to the monitor; select time-out periods in SETUP; in a standard configuration of one hard disk drive and one diskette drive, system consumes less than 30 Watts in standby mode
System speed	Fast and slow processor speeds available; fast is the speed of the processor and slow is 8 MHz; from the MS-DOS prompt, speed selectable by pressing **Ctrl Alt -** (slow) or Ctrl Alt + (fast).
Memory	8MB RAM standard using SIMMs; expandable to 128MB using 1,2,4,8,16, and 32MB SIMMs; SIMMs must be tin-plated, 72-pin, 32-bit, fast-page mode type with access speed of 70ns or faster
ROM	128KB Phoenix* system BIOS, video BIOS, and SETUP code located in a flash memory device on system board
Video RAM	1MB DRAM on main system board; expandable to 2MB using two 512KB, 40-pin, SOJ flat pack video DRAM chips
Shadow RAM	Supports shadowing of system and video BIOS ROM into RAM; shadowing selectable in SETUP program
Cache	8 or 16KB of internal cache in the processor; supports 128KB, 256KB, 512KB, or 1MB of external cache with 32K x 8,64K **x 8,** or 128K x 8,15ns or 20ns SRAM DIP chips and a 32K x 8 or 64K x 8 tag chip
Math coprocessor	Math coprocessor built into the processor on all DX and Intel Pentium OverDrive processors
Clock/ calendar	Real-time clock, calendar, and CMOS RAM socketed on main system board with integrated lithium battery

Controllers

PCI Chipset	Provides PCI caching, memory and control for the PCI bus, and the two-channel PCI IDE interface; integrated PCI bridge translates CPU bus cycles to PCI bus cycles and CPU-to-PCI memory write cycles to PCI burst cycles

Video	Cirrus Logic GD5430 high-performance GUI accelerator controller supports resolutions up to 1024 x 768 in 256 colors with 1MB of video DRAM; 1280 x 1024 with 2MB of video DRAM
Diskette	Controller on main system board supports up to two diskette drives or one diskette/ combo diskette and one tape drive
Hard disk	Two PCI, ATA-2 compatible two-channel, local bus, enhanced IDE interfaces on main system board support up to four IDE devices (two on each channel); CD-ROM drives cannot be connected to the same channel as hard disk drives; BIOS provides hard disk auto-sensing and enhanced IDE functions

Interfaces

Monitor	Energy Star compliant video interface for fixed or multi-frequency monitor built into system board; 15-pin, D-shell connector
Parallel	One standard, multimode parallel interface built into main system board; supports 8-bit unidirectional, 16-bit bidirectional, and ECP (Extended Capability Port) modes; 25-pin, D-shell connector; operation controllable by SETUP program and jumpers
Serial	Two high-speed RS-232C, programmable, asynchronous interfaces built into main system board; 16C550-compatible; 9-pin, D-shell connectors
Keyboard	PS/2 compatible keyboard interface built into main system board; 6-pin, mini DIN connector
Mouse	PS/2 compatible mouse interface built into main system board; 6-pin, mini DIN connector
Option slots	Connector card with five I/O expansion slots; three ISA compatible (8.33 MHz bus speed), two PCI compatible (33 MHz bus speed)
Speaker	Internal

Mass Storage

Slimline
Internal mount:
One 3.5-inch wide, one-inch high drive
Externally accessible mounts:
One 3.5-inch wide, one-inch high drive and two 5.25-inch wide, half-height drives

Tower
Front internal mount:
One 3.5-inch wide, one-inch high drive
Rear internal mounts:
Two 3.5-inch wide, one-inch high drives or one 3.5-inch wide, full-height drive
Externally accessible mounts:
Two 3.5-inch wide, one-inch high drives and two 5.25-inch wide, half-height drives

Diskette drive types	3.5-inch diskette drive, 720KB or 1.44MB storage capacity; 5.25-inch diskette drive, 360KB or 1.2MB storage capacity; or combination 3.5-inch/5.25-inch or 3.5-inch/PCMCIA diskette drive
Hard disk drive types	5.25-inch or 3.5-inch form factor hard disk drive(s), up to half-height size; maximum of four drives
Other devices	Half-height tape drive, CD-ROM drive, optical drive, PCMCIA card reader, or other storage device; 5.25-inch, or 3.5-inch with mounting frames

Keyboard

Detachable, two-position height; 101, 102, or 104 sculpted keys; country-dependent main typewriter keyboard; numeric /cursor control keypad; four-key cursor control keypad; 12 function keys

Mouse

Detachable, two-button, PS/2 compatible

SETUP Program

Stored in ROM; accessible by pressing **Del** during boot

System security	User and Supervisor level passwords available for system boot or diskette access
Virus protection	Write protection feature for the hard disk drive boot sector

Physical Characteristics

Dimension	Slimline	Tower
Width	16.8 inches (427 mm)	7.1 inches (181 mm)
Depth	15.8 inches (401 mm)	16.2 inches (413 mm)
Height	4.4 inches (112 mm)	13.2 inches (337 mm)
Weight	18.2 b (8.3 kg) with one diskette drive, without keyboard	20.6 lb (9.3 kg) with one diskette drive. without keyboard

Power Supply

Type	200 Watt, UL/TUV/CSA listed, fan-cooled
Input ranges	100-120 VAC or 200-240 VAC; switch-selectable
Maximum output	+5 VDC at 20 Amps, -5 VDC at 0.5 Amp +12 VDC at 8 Amps, -12 VDC at 0.5 Amp
Frequency	50 to 60Hz
Cables	Two to main system board, five to mass storage devices; for more than five devices, Y cables can be installed on the existing cables

Option slot power limits

output voltage (VDC)	+5 volts	–5 volts	+12 volts	–12 volts
For all slots	12 Amps	0.4 Amp	4.0 Amps	0.4 Amp

Environmental Requirements

Condition	Operating range	Storage range
Temperature	41° to 90° F (5° to 32° C)	-4° to 140°F (-20° to 60° C)
Humidity (non-condensing)	20% to 90%	10% to 90%
Altitude	-330 to 9,900 ft (-100 to 3,000 m)	-330 to 39,600 ft (-100 to 12,000 m)

Jumper Settings

Miscellaneous jumper settings

Jumper number	Jumper setting	Function
JP4	1-2* 2-3 Off	Selects 5V flash memory Selects 12V flash memory EPROM
JP5	Off * 1-2	Enables PCI IDE controller Disables PCI IDE controller
JP11	On off'	Clears CMOS memory (resets SETUP values to factory defaults) Normal CMOS values
JP12	1-2 . 2-3	Enables on-board I/O controller Disables on-board I/O controller
JP15	1-2* 2-3	Enables on-board VGA controller Disables on-board VGA controller

* Default setting

Parallel port ECP mode DRQ jumper settings

Function	JP13	JP14
DRQ1 (DACK1)*	1-2	1-2
DRQ4 (DACK3)	2-3	2-3

* Default setting

CPU type jumper settings

	CPU type										
	Intel or AMD		Intel				Cyrix			UMC	
Jumper number	486 DX/DX2 (non-SL)	486 DX2/DX4 (P24D L1-WB or SV8B)	486 SX	486DXSL/DX2SL/DX4SL (non-WB)	486 SXSL/SX2SL	P24T	5X86 (M1SC)	486 S (M6)	486 DX/DX2/DX4 (M7)	U5DS-SUPER	U5S-SUPER
JP6	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	2-3	2-3
JP10	1-2	1-2	1-2	1-2	1-2	1-2	1-2	2-3	2-3	1-2	1-2
JP19	Off	Off	Off	Off	Off	Off	Off	On	On	Off	Off
JP20	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
JP21	Off	Off	Off	*	Off	Off	Off	Off	Off	Off	Off
JP22	1-2	2-3	1-2	2-3	2-3	2-3	2-3	2-3	2-3	1-2	1-2
JP23	1-2	1-2	Off	1-2	Off	2-3	1-2	Off	1-2	1-2, 3-4	1-2, 3-4
JP24	Off	3-4	Off	Off	Off	Off	1-2, 3-4	2-3	2-3	Off	Off
JP25	Off	1-2	Off	1-2	1-2	1-2	1-2	1-2	1-2	2-3	2-3
JP26	Off	1-2, 3-4	Off	1-2	1-2	1-2	1-2, 3-4	2-3	2-3	Off	Off
JP27	Off	Off	Off	Off	Off	1-2	Off	1-2	2-3	3-4	3-4
JP28	1-2, 3-4	1-2, 3-4	2-3	1-2, 3-4	2-3	1-2, 3-4	1-2, 3-4	2-3	1-2, 3-4	1-2, 3-4	2-3
JP29	Off	2-3, 4-5	Off	2-3, 4-5	2-3, 4-5	2-3, 4-5	2-3, 4-5	2-3, 4-5	1-2, 3-4	Off	Off
JP32	On	Off	On	Off	Off	Off	Off	On	Off	On	On

* Off for DX4 (3x); 2-3 for DX2 (2X)

CPU voltage jumper settings

CPU voltage	JP18 (default depends on installed processor)
3.3V	3-4
3.45V	5-6
3.6V	7-8
4.0V	9-10
5.0V	1-2

Cache jumper settings

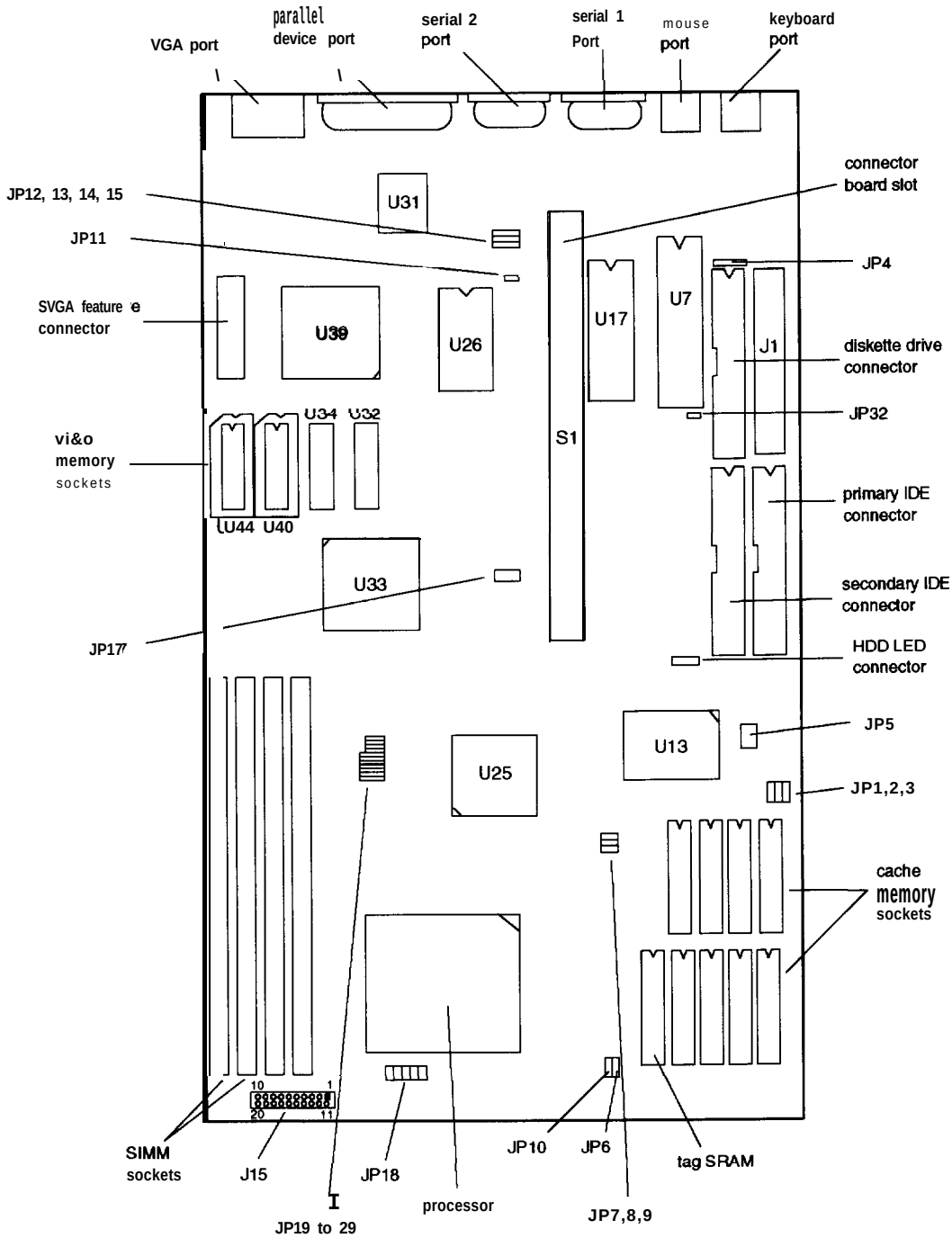
Cache configuration	JP1	JP2	JP3	JP7	JP8	JP9
128KB (32K x 8 SRAMs in Bank 0)	2-3	Off	Off	Off	Off	Off
256KB (32K x 8 SRAMs in Banks 0 & 1)	1-2	Off	Off	On	Off	On
256KB (64K x 8 SRAMs in Bank 0)	2-3	1-2	Off	Off	Off	On
512KB (64K x 8 SRAMs in Banks 0 & 1)	1-2	2-3	Off	On	Off	On
512KB (128K x 8 SRAMs in Bank 0)	2-3	1-2	1-2	On	Off	On
1MB (128K x 8 SRAMs in Banks 0 & 1)	1-2	2-3	2-3	On	On	On

CPU clock jumper settings

CPU clock speed	JP17 (default depends on installed processor)
25 MHz	1-2
33 MHz	1-2, 3-4, 5-6
40 MHz	1-2, 3-4
50 MHz	5-6

System Board Components

The diagram below illustrates the components on the system board for the ActionPC/ActionTower 7000 series **(including** ActionTower 8400). The table following it describes these components.



System board components

Connector	Function
J1	Power connector
J2	Primary IDE connector
J3	PS/2 keyboard connector
J4	Diskette drive connector
J5	Secondary IDE connector
J7	HDD LED connector
J10	PS/2 mouse connector
J12	Serial 1 port connector
J13	Serial 2 port connector
J15	Pins 2-3: Turbo LED connector Pins 9-10: Hardware reset connector Pins 11-13: Power LED connector Pins 17-20: Speaker connector
J16	Printer (parallel) port connector
J17	SVGA feature connector
J18	15-pin DIN type VGA connector
S1	Riser card slot; default settings of PCI AD Select are AD12 and AD13
U1-6, U9-10	External cache memory sockets
U7	AMIKEY-2 keyboard controller
U15	Cache tag RAM chip
U17	Phoenix system and video BIOS chip
U21	Processor (CPU)
U26	Dallas DS 12887 real-time clock chip
U31	SMC FDC 37C665 parallel port super I/O diskette controller
U32, U34	Soldered standard Video RAM
U33, U13, U25	UMC UM8666, CMD PCI0640B, UMC UM8881 PCI chipset
U39	Cirrus Logic GD5430 VGA controller
U40, U44	Video DRAM expansion sockets

SIMM Installation

The computer comes with 8MB of memory using SIMMs. By installing additional SIMMs, you can increase the amount of memory up to 128MB.

There are four SIMM sockets on the main system board, and each can contain one memory module. You can install 1MB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMMs. The sockets are labeled on the main system board.

The following table shows the recommended SIMM configurations. Do not install SIMMs in any other configuration.

SIMM configurations

Bank 0 (SIM1)	Type	Bank 1 (SIM2)	Type	Bank 2 (SIM3)	Type	Bank 3 (SIM4)	Type	Total memory
1MB	Single	1MB	Single	—	—	—	—	2MB
1MB	Single	1MB	Single	1MB	Single	1MB	Single	4MB
1MB	Single	1MB	Single	2MB	Double	—	—	4MB
1MB	Single	1MB	Single	2MB	Double	2MB	Double	6MB
1MB	Single	1MB	Single	4MB	Single	—	—	6MB
1MB	Single	1MB	Single	4MB	Single	4MB	Single	10MB
1MB	Single	1MB	Single	8MB	Double	—	—	10MB
1MB	Single	1MB	Single	8MB	Double	8MB	Double	18MB
1MB	Single	1MB	Single	16MB	Single	—	—	18MB
1MB	Single	1MB	Single	16MB	Single	16MB	Single	34MB
1MB	Single	1MB	Single	32MB	Double	—	—	34MB
1MB	Single	1MB	Single	32MB	Double	32MB	Double	66MB
2MB	Double	—	—	—	—	—	—	2MB
2MB	Double	—	—	2MB	Double	—	—	4MB
2MB	Double	2MB	Double	—	—	—	—	4MB
2MB	Double	2MB	Double	2MB	Double	—	—	6MB
2MB	Double	2MB	Double	1MB	Single	1MB	Single	6MB
2MB	Double	2MB	Double	2MB	Double	2MB	Double	8MB
2MB	Double	2MB	Double	4MB	Single	—	—	8MB
2MB	Double	2MB	Double	4MB	Single	4MB	Single	12MB
2MB	Double	2MB	Double	8MB	Double	—	—	12MB
2MB	Double	2MB	Double	8MB	Double	8MB	Double	20MB
2MB	Double	2MB	Double	16MB	Single	—	—	20MB
2MB	Double	2MB	Double	16MB	Single	16MB	Single	36MB
2MB	Double	2MB	Double	32MB	Double	—	—	36MB
2MB	Double	2MB	Double	32MB	Double	32MB	Double	66MB
4MB	Single	—	—	—	—	—	—	4MB
4MB	Single	—	—	4MB	Single	—	—	8MB
4MB	Single	4MB	Single	—	—	—	—	8MB
4MB	Single	4MB	Single	1MB	Single	1MB	Single	10MB
4MB	Single	4MB	Single	2MB	Double	—	—	10MB
4MB	Single	4MB	Single	4MB	Single	—	—	12MB
4MB	Single	4MB	Single	2MB	Double	2MB	Double	12MB
4MB	Single	4MB	Single	4MB	Single	4MB	Single	16MB
4MB	Single	4MB	Single	8MB	Double	—	—	16MB
4MB	Single	4MB	Single	8MB	Double	8MB	Double	24MB
4MB	Single	4MB	Single	16MB	Single	—	—	24MB
4MB	Single	4MB	Single	16MB	Single	16MB	Single	40MB
4MB	Single	4MB	Single	32MB	Double	—	—	40MB
4MB	Single	4MB	Single	32MB	Double	32MB	Double	72MB
8MB	Double	—	—	—	—	—	—	8MB
8MB	Double	—	—	8MB	Double	—	—	16MB
8MB	Double	8MB	Double	—	—	—	—	16MB
8MB	Double	8MB	Double	1MB	Single	1MB	Single	18MB
8MB	Double	8MB	Double	2MB	Double	—	—	18MB
8MB	Double	8MB	Double	2MB	Double	2MB	Double	20MB
8MB	Double	8MB	Double	4MB	Single	—	—	20MB
8MB	Double	8MB	Double	8MB	Double	—	—	24MB
8MB	Double	8MB	Double	4MB	Single	4MB	Single	24MB
8MB	Double	8MB	Double	8MB	Double	8MB	Double	32MB
8MB	Double	8MB	Double	16MB	Single	—	—	32MB
8MB	Double	8MB	Double	16MB	Single	16MB	Single	48MB
8MB	Double	8MB	Double	32MB	Double	—	—	48MB
8MB	Double	8MB	Double	32MB	Double	32MB	Double	80MB
16MB	Single	—	—	—	—	—	—	16MB
16MB	Single	—	—	16MB	Single	—	—	32MB
16MB	Single	16MB	Single	—	—	—	—	32MB
16MB	Single	16MB	Single	1MB	Single	1MB	Single	34MB
16MB	Single	16MB	Single	2MB	Double	—	—	34MB
16MB	Single	16MB	Single	2MB	Double	2MB	Double	36MB
16MB	Single	16MB	Single	4MB	Single	—	—	36MB
16MB	Single	16MB	Single	4MB	Single	4MB	Single	40MB

SIMM configurations (continued)

Bank 0 (SIM1)	Type	Bank 1 (SIM2)	Type	Bank 2 (SIM3)	Type	Bank 3 (SIM4)	Type	Total memory
16MB	Single	16MB	Single	8MB	Double	—	—	40MB
16MB	Single	16MB	Single	16MB	Single	—	—	48MB
16MB	Single	16MB	Single	8MB	Double	8MB	Double	48MB
16MB	Single	16MB	Single	16MB	Single	16MB	Single	64MB
16MB	Single	16MB	Single	32MB	Double	—	—	64MB
16MB	Single	16MB	Single	32MB	Double	32MB	Double	96MB
32MB	Double	—	—	—	—	—	—	32MB
32MB	Double	—	—	32MB	Double	—	—	64MB
32MB	Double	32MB	Double	—	—	—	—	64MB
32MB	Double	32MB	Double	1MB	Single	1MB	Single	66MB
32MB	Double	32MB	Double	2MB	Double	—	—	66MB
32MB	Double	32MB	Double	2MB	Double	2MB	Double	68MB
32MB	Double	32MB	Double	4MB	Single	—	—	68MB
32MB	Double	32MB	Double	4MB	Single	4MB	Single	72MB
32MB	Double	32MB	Double	8MB	Double	—	—	72MB
32MB	Double	32MB	Double	8MB	Double	8MB	Double	80MB
32MB	Double	32MB	Double	16MB	Single	—	—	80MB
32MB	Double	32MB	Double	16MB	Single	16MB	Single	96MB
32MB	Double	32MB	Double	32MB	Double	—	—	96MB
32MB	Double	32MB	Double	32MB	Double	32MB	Double	128MB

- **If you install SIMMs in both Sank 0 and Sank 1 or Sank 2 and Sank 3. SIMM types must match.**

Use only tin-plated, 32-bit, 72-pin, fast-page mode SIMMs that operate at an access speed of 80ns or faster. Be sure all the SIMMs operate at the same speed.

Video Memory

The computer comes with 1MB of video memory. You can increase the video memory to 2MB by installing two 512KB, 40-pin SOJ flat pack video DRAM chips. (You cannot increase video memory by installing just one chip.)

Video resolutions and colors

Resolution	Memory requirement	Color	Refresh rates (Hz)	Remarks
640x480	1MB	256	60/72/75	8 bits/pixel
	1MB	32K/64K	60/72/75	16 bits/pixel
	1MB	16.8M (True Color)	60	24 bits/pixel
800 x 600	1MB	256	60/72/75	8 bits/pixel
	1MB	32K/64K	60/72/75	16 bits/pixel
	2MB	32K/64K	60/72/75	16 bits/pixel
1024 x 768	1MB	256	43.5/60/70/75	8 bits/pixel*
	2MB	32K	43.5/60/70/75	16 bits/pixel*
	2MB	64K	43.5	16 bits/pixel**
1280 x 1024	1MB	16	43.5	4 bit planes**
	2MB	256	43.5/60	8 bits/pixel*

- **Non-interlaced and Interlaced**
- *** Interlaced**

External Cache

You can install 128KB, 256KB, 512KB, or 1MB of external cache with 32K x 8, 64K x 8, or 128K x 8 15ns or 20ns, SRAM DIP chips and one 32K x 8 or 64K x 8 15ns or 20ns tag chip. The computer may already have **cache** installed.

You must install cache in one of **the** configurations in the table below (each bank contains four cache memory sockets).

Cache memory configurations

BANK 0 U23, 24, 25, 26	BANK 1 U27, 35, 36, 37	Tag SRAM U30	Total cache
32K x 8, 28-pin	None	32K x 8, 28-pin	128KB
32K x 8, 28-pin	32K x 8, 28-pin	32K x 8, 28-pin	256KB
64K x 8, 28-pin	None	32K x 8, 28-pin	256KB
64K x 8, 28-pin	64K x 8, 28-pin	32K x 8, 28-pin	512KB
128K x 8, 32-pin	None	32K x 8, 28-pin	512KB
128K x 8, 32-pin	128K x 8, 32-pin	64K x 8, 28-pin	1MB

Processor Upgrades

The computer's processor **can** be upgraded by replacing **the** existing processor with a faster one. The following table lists supported processors and voltages.

Supported processors

Processor	Voltage	Processor	Voltage
AMD DX4/100	3.45	Intel Pentium OverDrive	5.0
AMD DX2/66	3.45	Intel DX4/100	3.45
AMD DX2/80	3.45	Intel DX4/75	3.3
Cyrix DX2/80	4.0	Intel DX2/50/66	5.0
Cyrix DX2/66	3.45/3.6	Intel DX, SX	5.0
Cyrix DX2/50	3.3/5.0	UMC U5S-Super	5.0
Cyrix DX4	3.45	UMC U5DS-Super	5.0
Cyrix 5x86	3.45		

Hard Disk Drive Types

Your computer comes with a hard disk auto-sensing feature. To use it, select one of the drives you have installed from the Fixed Disk Setup screen. On the screen that appears for that drive, press Enter to select the Autotype Fixed Disk option. The system detects the type of hard disk drive, fills in the drive's parameters, and sets the remaining options on the screen.

Hard Disk Drive Information

The following table lists parameters for hard disk drives qualified for use in the computer.

Hard disk drive parameters

	Conner®						Western Digital®			
Parameters	CFS1275A	CFS850A	CFS540A	CFS425A	CFS420A	CFS270A	AC2540	AC2420	AC2340	AC2250
Formatted capacity (MB)	1275	850	540	425	420	270	540	425	341	256
Size, width x height (in)	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1	4 x 1
Weight (lb)	1.25	1.25	1.2	1.1	1.16	1.1	1.2	1.12	1.12	1.12
Cylinders	3687	3687	2805	839	2388	525	1048	2720	2233	2233
Disks	3	2	2	1	2	1	2	2	2	2
Heads	6	4	4	2	4	2	4	4	4	3
Sectors per track	78 - 144	78 - 144	79 - 119	78 - 144	63 - 100	72 - 117	63	55 - 99	56 - 96	56 - 96
Rotational speed (RPM)	3600	3600	3600	3600	3600	3400	4500	3314	3322	3322
Buffer size (KB)	64	64	64	64	32	32	128	128	128	64
Average seek time (ms)	<15	<15	14	14	14	14	11	<13	<13	<13
Encoding method	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7	RLL 1,7
Power dissipation (seek)	5.6 W	5.6 W	4.3 W	3.9 W	5.12 W	3.9 W	7.0 W	5.2 W	5.2 W	5.2 W
Logical parameters										
Cylinders	2479	1652	1050	826	826	525	1048	989	1010	1010
Heads	16	16	16	16	16	16	16	15	12	9
Precomp zone	0	0	0	0	0	0	1048	989	1011	1011
Landing zone	2479	1652	1050	826	826	525	1048	989	1011	1011
Sectors	63	63	63	63	63	63	63	56	55	55

IDE hard disk drive jumper settings

Model number	Single drive	Master drive	Slave drive
Conner CFS1275A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS850A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS540A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS425A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS420A	C/D jumpered	C/D jumpered	No jumpers
Conner CFS270A	C/D jumpered	C/D jumpered	No jumpers
Western Digital AC2540	No jumpers	5-6 jumpered	3-4 jumpered
Western Digital AC2420	No Jumpers	5-6 jumpered	3-4 jumpered
Western Digital AC2340	No jumpers	5-6 jumpered	3-4 jumpered
Western Digital AC2250	No jumpers	5-6 jumpered	3-4 jumpered

DMA Assignments

Level	Assigned device
DMA0	Reserved
DMA1	Available
DMA2	Diskette drive controller
DMA3	Available
DMA4	Cascade from DMA1 to DMA2
DMA5	Spare
DMA6	Spare
DMA7	Spare

Hardware Interrupts

IRQ no.	Function
IRQ0	Timer output 0
IRQ1	Keyboard
IRQ2	Cascade to IRQ9
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Available
IRQ6	Diskette drive controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Available
IRQ10	Available
IRQ11	Available
IRQ12	PS/2 mouse
IRQ13	Math coprocessor
IRQ14	Primary IDE controller
IRQ15	Secondary IDE controller

System Memory Map

Address range	Function
FE0000h-FFFFFFh	128KB duplication of ROM BIOS stored at 0E0000h-0FFFFFh
100000h-FDFFFFh	System extended memory (128MB maximum)
0E0000h-0FFFFFh	128KB ROM BIOS
0C8000h-0DFFFFh	Adapter ROM BIOS
0C0000h-0C7FFFh	Video ROM BIOS
0A0000h-0BFFFFh	128KB video memory
000000h-09FFFFh	640KB base memory

System I/O Address Map

Hex address	Assigned device
000 - 01F	DMA controller 1, 8237
020 - 03F	Interrupt controller 1, 8259
022 - 024	Reserved
040 - 05F	Timer, 8254
060 - 06F	Keyboard controller, 8242PE
070 - 07F	Real-time clock NMI (non-maskable interrupt)
080 - 09F	DMA page register, 74LS612
0A0 - 0BF	Interrupt controller 2, 8259
0C0 - 0DF	DMA controller 2, 8237
0F0	Clear math coprocessor
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
1F0 - 1F8	Primary hard disk interface
1E0 - 1E7	Secondary hard disk interface
200 - 207	Game I/O
278 - 27F	Parallel printer port 2
2B0 - 2DF	Alternate enhanced graphics adapter
2E1	GPIB (adapter 0)
2E2, 2E3	Data acquisition (adapter 0)
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
360 - 363	Available
368 - 36B	Available
378 - 37F	Parallel printer port 1
380 - 38F	Available
390 - 393	Available
3A0 - 3AF	Available
3B0 - 3BF	Available
3C0 - 3CF	Available
3D0 - 3DF	Available
3F0 - 3F7	Diskette drive controller
3F8 - 3FF	Serial port 1
6E2, 6E3	Available
790 - 793	Available
AE2, AE3	Available
B90, B93	Available
EE2, EE3	Available
1390 - 1393	Available
22E1	Available
2390 - 2393	Available
42E1	Available
63E1	Available
82E1	Available
A2E1	Available
C2E1	Available
E2E1	Available

Connector Pin Assignments

Parallel port connector pin assignments (J16)

Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe*	10	ACK *	19	Signal ground
2	Data 0	11	Busy	20	Signal ground
3	Data 1	12	PE	21	Signal ground
4	Data 2	13	Select	22	Signal ground
5	Data 3	14	AFD *	23	Signal ground
6	Data 4	15	Error *	24	Signal ground
7	Data 5	16	Init *	25	Signal ground
8	Data 6	17	Selectin *		
9	Data 7	18	Signal ground		

* Active low logic

Serial port connector pin assignments (J12 and J13)

Pin	Signal	Pin	Signal
1	Data carrier detect	6	Data set ready
2	Receive data	7	Request to send
3	Transmit data	8	Clear to send
4	Data terminal ready	9	Ring indicator
5	Ground		

Keyboard and mouse connector pin assignments (J3 and J10)

Pin	Signal	Pin	Signal
1	Data	4	Vcc
2	NC	5	clock
3	Ground	6	NC

VGA port connector pin assignments (J18)

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	6	Red ground	11	NC
2	Green	7	Green ground	12	Monitor detect
3	Blue	8	Blue ground	13	Horizontal sync
4	NC	9	NC	14	Vertical sync
5	Ground	10	Ground	15	NC

LED connector pin assignments (J15)

Pin	Signal	Pin	Signal
1	NC	11	Power LED (yellow)
2	Turbo LED (yellow)	12	NC
3	Turbo LED (white)	13	Power LED (white)
4	NC	14	NC
5	NC	15	NC
6	NC	16	NC
7	NC	17	Speaker (red)
8	NC	18	NC
9	Hardware reset (white)	19	NC
10	Hardware reset (yellow)	20	Speaker (black)

HDD LED connector pin ***assignments (J7)***

Pin	Signal	Pin	Signal
1	IRed	2	White

Power supply connector pin assignments (J1)

Pin	Signal	Pin	Signal
1	Power good	7	Ground
2	+5 VDC	8	Ground
3	+12 VDC	9	–5 VDC
4	–12 VDC	10	+5 VDC
5	Ground	11	+5 VDC
6	Ground	12	+5 VDC

Diskette drive connector pin assignments (J4)

Pin*	Signal	Pin*	Signal
2	NC	20	Step
4	NC	22	Write data
6	NC	24	Write enable
8	Index	26	Track 0
10	Motor A	28	Write protect
12	Drive B	30	Read data
14	Drive A	32	Select header 0
16	Motor B	34	Disk change
18	Direction		

• All odd-numbered pins are grounds

IDE drive connector pin assignments (J2 and J5)

Pin	Signal	Pin	Signal	Pin	Signal
1	RESET*	15	D1	29	NC
2	Ground	16	D14	30	Ground
3	D7	17	D0	31	IRQ14
4	D8	18	D15	32	IOCS16*
5	D6	19	Ground	33	A1
6	D9	20	NC	34	NC
7	D5	21	NC	35	A0
8	D10	22	Ground	36	A2
9	D4	23	IOW*	37	CS0*
10	D11	24	Ground	38	CS1*
11	D3	25	IOR*	39	Active*
12	D12	26	Ground	40	Ground
13	D2	27	IOCHRDY*		
14	D13	28	BALE		

*Active low logic

Option card riser board connector pin assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	+12 VDC	A31	SA3	B1	+12 VDC	B31	BALE
A2	Ground	A32	SA2	B2	+5 VDC	B32	+5 VDC
A3	Ground	A33	SA1	B3	Ground	B33	OSC
A4	IOCHCK*	A34	SA0	B4	Ground	B34	Ground
A5	SD7	A35	Ground	B5	RESETDRV	B35	Ground
A6	SD6	A36	Ground	B6	+5 VDC	B36	+5 VDC
A7	SD5	A37	+5 VDC	B7	IRQ9	B37	+5 VDC
A8	SD4	A38	SBHE*	B8	5 VDC	B38	MEMCS16*
A9	SD3	A39	LA23	B9	DRQ2	B39	IOCS16*
A10	SD2	A40	LA22	B10	12 VDC	B40	IRQ10
A11	SD1	A41	LA21	B11	OWS*	B41	IRQ11
A12	SD0	A42	LA20	B12	+12 VDC	B42	IRQ12
A13	IOCHRDY	A43	LA19	B13	Ground	B43	IRQ15
A14	AEN	A44	LA18	B14	SMEMW*	B44	IRQ14
A15	SA19	A45	LA17	B15	SMEMR*	B45	DACK0*
A16	SA18	A46	MEMR*	B16	IOW*	B46	DRQ0
A17	SA17	A47	MEMW*	B17	IOR*	B47	DACK5*
A18	SA16	A48	SD8	B18	DACK3*	B48	DRQ5
A19	SA15	A49	SD9	B19	DRQ3	B49	DACK6*
A20	SA14	A50	SD10	B20	DACK1*	B50	DRQ6
A21	SA13	A51	SD11	B21	DRQ1	B51	DACK7*
A22	SA12	A52	SD12	B22	REFRESH*	B52	DRQ7
A23	SA11	A53	SD13	B23	SYSCLK	B53	+5 VDC
A24	SA10	A54	SD14	B24	IRQ7	B54	MASTER*
A25	SA9	A55	SD15	B25	IRQ6	B55	Ground
A26	SA8	A56	Ground	B26	IRQ5	B56	Ground
A27	SA7	A57	Ground	B27	IRQ4	B57	Ground
A28	SA6	A58	Ground	B28	IRQ3	B58	+5 VDC
A29	SA5	A59	+5 VDC	B29	DACK2*	B59	+5 VDC
A30	SA4	A60	+5 VDC	B30	TC	B60	+5 VDC

. Active low logic

ISA option slot connector pin assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	IOCHCK*	A26	SA5	B20	SYSCLK	C14	SD11
A2	SD7	A27	SA4	B21	IRQ7	C15	SD12
A3	SD6	A28	SA3	B22	IRQ6	C16	SD13
A4	SD5	A29	SA2	B23	IRQ5	C17	SD14
A5	SD4	A30	SA1	B24	IRQ4	C18	SD15
A6	SD3	A31	SA0	B25	IRQ3	D1	Memcs16*
A7	SD2	B1	Ground	B26	DACK2*	D2	IOCS16*
A8	SD1	B2	RESETDRV	B27	T/C	D3	IRQ10
A9	SD0	B3	+5 VDC	B28	BALE	D4	IRQ11
A10	IORDY	B4	IRQ9	B29	+5 VDC	D5	IRQ12
A11	AEN	B5	5 VDC	B30	OSC	D6	IRQ15
A12	SA19	B6	DRQ2	B31	Ground	D7	IRQ14
A13	SA18	B7	12 VDC	C1	SBHE*	D8	DACK0*
A14	SA17	B8	OWS*	C2	SA23	D9	DREQ0
A15	SA16	B9	+12 VDC	C3	SA22	D10	DACK5*
A16	SA15	B10	Ground	C4	SA21	D11	DREQ5
A17	SA14	B11	SMEMW*	C5	SA20	D12	DACK6*
A18	SA13	B12	SMEMR*	C6	SA19	D13	DRQ6
A19	SA12	B13	IOW*	C7	SA18	D14	DACK7*
A20	SA11	B14	IOR*	C8	SA17	D15	DREQ7
A21	SA10	B15	DACK3*	C9	MEMR*	D16	+5 VDC
A22	SA9	B16	DREQ3	C10	MEMW*	D17	MASTER*
A23	SA8	B17	DACK1*	C11	SD8	D18	Ground
A24	SA7	B18	DREQ1	C12	SD9		
A25	SA6	B19	REF*	C13	SD10		

. Active low logic

SIMM socket connector pin assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Ground	19	NC	37	DP1	55	DQ11
2	DQ0	20	DQ4	38	DP3	56	DQ27
3	DQ16	21	DQ20	39	Ground	57	DQ12
4	DQ1	22	DQ5	40	CAS0*	58	DQ28
5	DQ17	23	DQ21	41	CAS2*	59	VCC
6	DQ2	24	DQ6	42	CAS3*	60	DQ29
7	DQ18	25	DQ22	43	CAS1*	61	DQ13
8	DQ3	26	DQ7	44	RAS0*	62	DQ30
9	DQ19	27	DQ23	45	RAS1*	63	DQ14
10	VCC	28	A7	46	A10A	64	DQ31
11	NC	29	NC	47	WE*	65	DQ15
12	A0	30	VCC	48	A10B	66	NC
13	A1	31	A8	49	DQ8	67	PD1
14	A2	32	A9	50	DQ24	68	PD2
15	A3	33	RAS3*	51	DQ9	69	PD3
16	A4	34	RAS2*	52	DQ25	70	PD4
17	A5	35	DP2	53	DQ10	71	NC
18	A6	36	DP0	54	DQ26	72	Ground

* Active low logic

Tested Operating Environments

The following operating environments have been tested for compatibility with the system.

Microsoft MS-DOS 3.3 and later
Novell DR DOS
Novell NetWare* 3.12 and 4.02
Novell Personal NetWare
IBM OS/2 including version 3.0 (Warp)
SCO UNIX
SCO Open Desktop
Microsoft Windows 3.0 and later
Microsoft Windows for WorkGroups
Microsoft Windows NT, including version 3.5
Microsoft Windows 95

*** Certified as workstation; tested as file sewer**

Your system has also received Novell's "Yes, NetWare tested and approved" certification as a workstation. As new environments become available, these also will be tested.

Installation/Support Tips

Installing Diskette Drives

- ❑ Make sure that the drive type has been correctly selected and that the drive is enabled in the SETUP program.
- ❑ Make sure jumper JPl2 is set to position 1-2 to enable the diskette drive controller.

Installing Hard Disk Drives

- ❑ If you are installing a drive that cannot use the embedded IDE interface (such as an ESDI drive), it is recommended that you use a 16-bit, AT-type hard disk controller. If you install a non-IDE hard disk drive and controller card, you must set jumper JP5 to On to disable both of the built-in IDE hard disk drive interfaces. Also, remove the hard disk drive ribbon connector from the system board.
- ❑ When installing a hard disk drive, use the auto-sensing feature in SETUP to select the correct type for the drive. If the auto-sensing feature does not produce a match for the drive, you can define your own drive type by selecting User as the type and entering the drive's parameters.

Software Problems

- ❑ When installing a copy-protected software package, first try the installation at high speed. If this does not work properly, select low speed by pressing Ctrl Alt - (on the numeric keypad). Try loading the program at low speed and then switching to high speed, if possible.
- ❑ When running a software package that uses a key disk as its copy-protection method, try loading it at high speed. If this does not work, load it at low speed.

Installing Option Cards

If you are installing a video adapter card, make sure you disable the built-m VGA controller by setting JP15 to 2-3.

Upgrading the Processor

When you replace the processor, you need to check the settings of several jumpers, as listed on page 3.

Booting Sequence

If you cannot boot the computer from the hard disk, make sure the booting sequence in SETUP is set to **A:** then **C** : . Then boot the computer from a system diskette in drive A.

Password

If you forget your password, you must discharge your CMOS memory as follows:

1. Turn off the computer and remove the cover.
2. Disable the password by setting jumper JP11 on the main system board to On.
3. Turn the computer on, leave it on for a few seconds, then turn it off again.
4. Set jumper JP11 back to off to select the system board battery.
5. Run SETUP to enter a new password, if desired.

Information Reference List

Engineering Change Notices

None.

Technical Information Bulletins

None.

Product Support Bulletins

None.

Related Documentation

TM-ACTPCT70	EPSON ActionPC 7000, ActionTower 7000 Service Manual
PL-ACTPCT70	EPSON ActionPC 7000, ActionTower 7000 Parts Price List
400434800	EPSON ActionPC 7000, ActionTower 7000 User's Guide