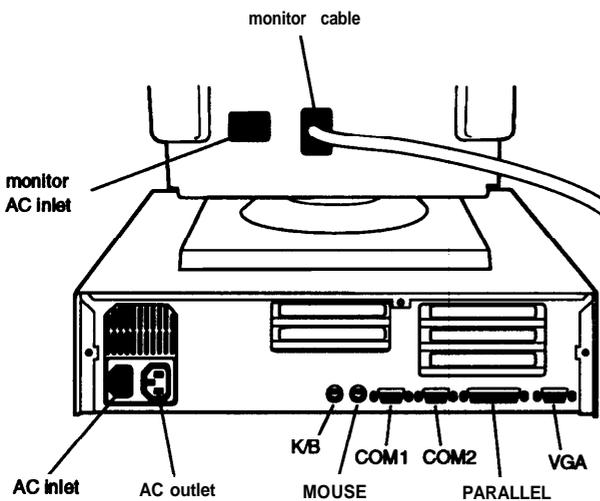
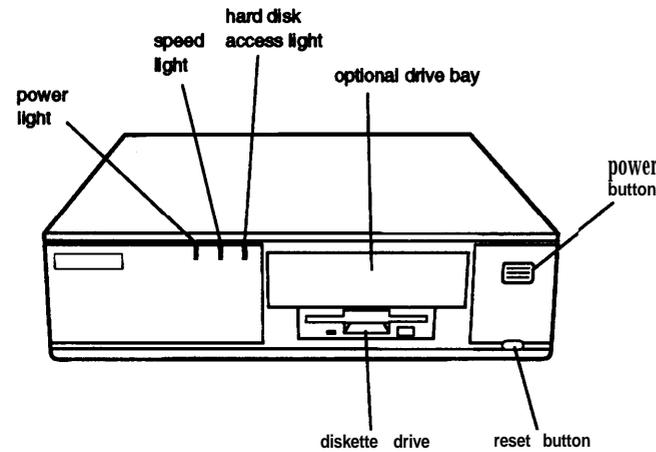


ActionDesk 4000+

The following diagrams illustrate the outside of the ActionDesk 4000+ system.



Computer Specifications

CPU and Memory

32-bit CPU Intel 486SX, DX, or DX2 processor upgradable to faster, more powerful processors, including the Pentium OverDrive

Green PC Energy saver Energy Star compliant (using less than 30 Watts) with a low-power standby mode for the hard disk drive and the video signals the computer sends to the monitor; time periods selectable in SETUP

System speed

Fast and slow speeds available as described in the table below; speed selection through keyboard commands or jumper setting

Speed setting	CPU speed	Local bus speed	ISA bus speed
Fast	25/33/50 MHz	25/33/50 MHz	8.33 MHz
Slow	8 MHz	25/33/50 MHz	8.33 MHz

At fast speed, DX2/50 and DX2/66 processors run internally at 50 and 66 MHz, but run externally at 25 and 33 MHz; local bus speeds for DX2 processors are 25 and 33 MHz, respectively

Memory

4MB RAM standard on a SIMM; expandable to 64MB using 1MB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMMs (when available); SIMMs are tin-plated (preferably), 72-pin, 32-bit or 36-bit, fast-page mode type with access speed of 70ns or faster

ROM

Phoenix system BIOS, video BIOS, and SETUP code located in 128KB EPROM on main system board

Video RAM

1MB DRAM on main system board; expandable to 2MB using two ZIP chips

Shadow RAM

Supports shadowing of system and video BIOS ROM into RAM

Memory relocation

Supports relocation of 256KB of memory from A0000h to BFFFFh and D0000h to EFFFFh to extended memory

Cache

8KB of internal cache on the CPU; supports 64KB, 128KB, or 256KB of external cache using 28-pin, 8 x 8, 20ns DIP chips or 28-pin, 32 x 8, 20ns DIP chips

Math coprocessor

Math coprocessor built into DX, DX2, and Pentium OverDrive processors

Clock/calendar

Contained in the 82C491 system controller chip along with 64 bytes of CMOS RAM backed up by a soldered NiCad rechargeable battery

Controllers

Video

Cirrus Logic GD5428 high speed local bus super VGA local bus controller with True Color support

Diskette

Controller on main system board supports up to two diskette drives or one diskette drive and one tape drive

Hard disk High-speed, 32-bit local bus IDE interface on main system board supports up to two IDE hard disk drives with built-in controller; BIOS provides hard disk auto-sensing function

Interfaces

Monitor VGA interface for fixed or multi-frequency monitor built into system board; supports a low-power standby mode for Energy Star compliant monitors; 15-pin, D-shell connector

Parallel One standard 8-bit parallel bidirectional interface built into main system board; 25-pin, D-shell connector

Serial Two RS-232C, programmable, asynchronous interfaces built into main system board; 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

Optional game port Optional 10-pin game port interface on system board; can control joy-stick functions with the addition of a port connector.

Option slots Three 16-bit, full-length and two 8-bit, half-length I/O expansion slots, ISA compatible, 8.33 MHz bus speed

Speaker Internal

Mass storage

Internal mounts:
Two 3½-inch wide, one-inch high drives; with three or more option cards installed, the power supply only supports one internal drive

Externally accessible mounts:
One 3½-inch wide, third-height drive and one 5¼-inch wide, half-height drive

Diskette drives 3.5-inch diskette drive, 720KB or 1.44MB storage capacity

5.25-inch diskette drive, 360KB or 1.2MB storage capacity

Hard disk drives 3½-inch form factor hard disk drive(s), up to half-height size

Other devices Half-height tape drive, CD-ROM, optical drive, or other storage device; 5¼-inch or 3½-inch with mounting frames

Keyboard

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

SETUP Program

Stored in ROM; accessible by pressing F2 during boot

System security User and supervisor level passwords (8 characters) available for system boot or diskette access

Virus protection Write protection feature for the hard disk drive boot sector; periodic reminder message for running virus detection utility

Physical Characteristics

Width 15.6 inches (396 mm)
Depth 14.5 inches (368 mm)
Height 4.1 inches (104 mm)
Weight 15 lb (6.8 kg), without drives or keyboard

Power Supply

Type 65 Watt, UL listed, fan-cooled
Input ranges 90 to 115, 230 to 260 VAC
Maximum outputs +5 VDC at 7.5 Amps, -5 VDC at 0.1 Amp, +12 VDC at 2.0 Amp, -12 VDC at 0.2 Amp
Frequency 50/60 Hz
Cables Two to main system board; four to mass storage devices

Option Slot Power Limits

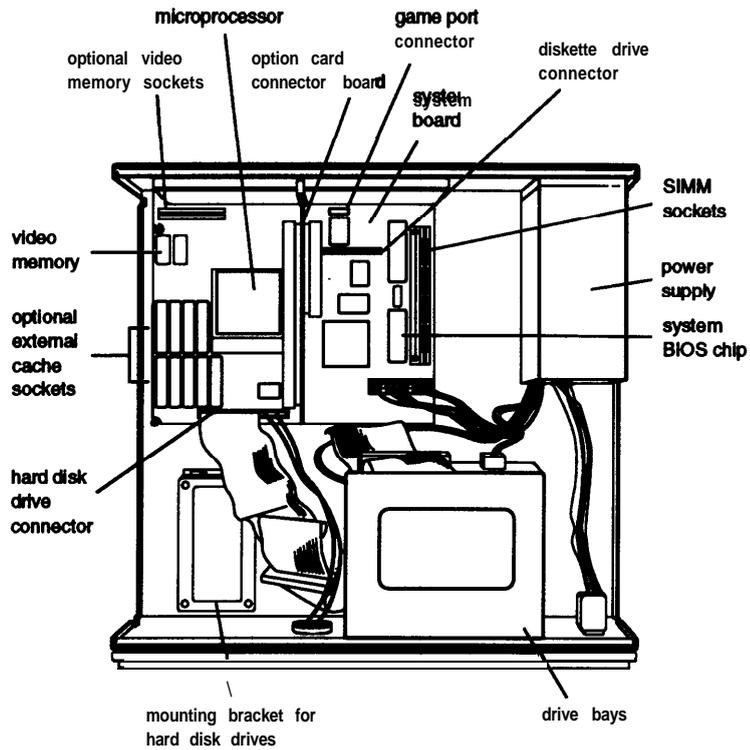
Maximum current	+5 Volts	-5 Volts	+12 Volts	-12 Volts
For all slots*	3.3 Amps	0.1 Amp	1.0 Amp	0.1 Amp

* Based on a system containing one hard disk drive and one diskette drive

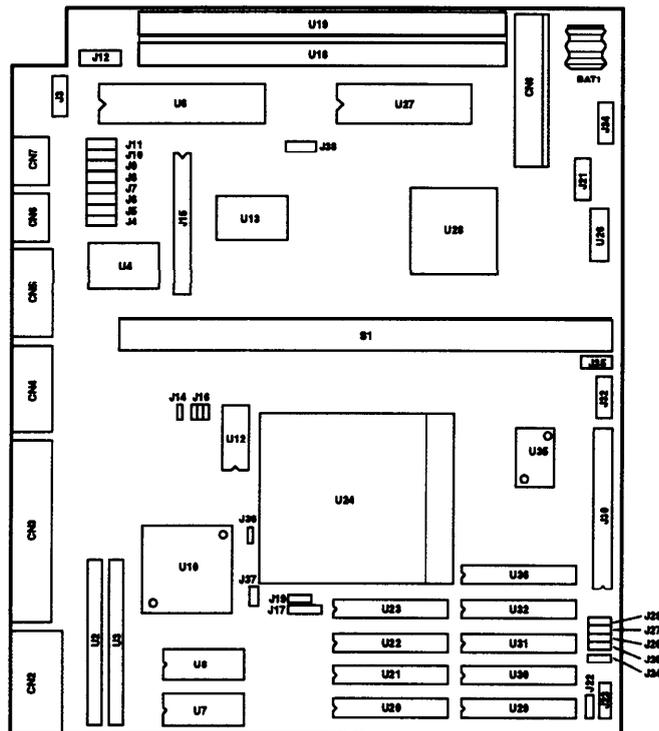
Environmental Requirements

Condition	Operating range	Non-operating range	Storage range
Temperature	41° to 90° F (5° to 32° C)	-4° to 140° F (20° to 60° C)	-4° to 140° F (-20° to 60° C)
Humidity (non-condensing)	20% to 90%	10% to 90%	10% to 90%
Altitude	-330 to 9,900ft (-100 to 3,000 m)	-330 to 39,600 ft (-100 to 12,000 m)	-330 to 39,600 ft (-100 to 12,000 m)
Maximum wet bulb	68° F (20° C)	104° F (40° C)	134° F (57° C)
Accoustical noise	46.2dB	N/A	WA

Major Subassemblies



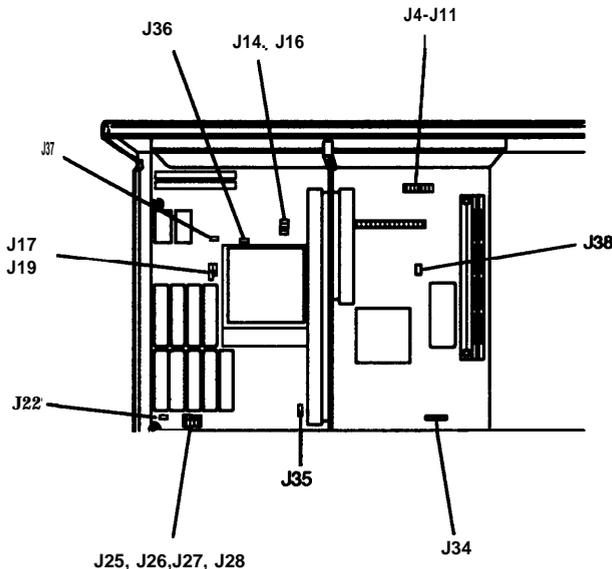
System Board Components



System board components and connectors

Socket	Component
U24	Processor
U27	Phoenix system and VGA BIOS; 150ns. 8-bit operation
U28	System controller (UMC82C491); integrated system, memory, and cache controller
U10	Video controller (GD5428); local bus VGA with integrated palette DAC, dual-frequency synthesizer, BitBLT for GUI acceleration
U4	Line and serial controller (UMC82C865F)
U6	Keyboard/mouse controller (8042 compatible UPI)
U13	Super I/O controller (UMC82C863); supports up to two diskette drives, two serial ports, and one parallel port
U35	Local bus IDE controller (Adaptec AIC-24VL01Q)
U12	Clock generator (IMI SC 425 chip); 4V to 7V operating supply range, 1 ns skew, CMOS or TTL compatible outputs
U20-23. U29-32	Cache SRAM sockets
U36	Cache tag socket
U7, U8, U2, U3	Video DRAM two chips soldered at U7 and U8; two expansion sockets at U2 and U3
CN2	Video connector; 15- Pin, D-shell
CN3	Parallel port; 25-pin, D-shell
CN5	Serial port labeled COM1; 9-pin, D-shell
CN4	Serial port labeled COM2; 9-pin, D-shell
CN6	I Mouse; 6-pin, mini-DIN
CN7	Keyboard; 6-pin, mini-DIN
CN8	Power supply; 12-pin connector
J2	Optional game port connector interface
J12	Fan connector; 2-pin header
J15	Diskette drive connector; 34-pin header
J21	Speaker connector; 4-pin header
J3, J24	Reset; P-pin header
J30	Hard disk drive; 40-pin header
J32	Hard disk drive, weed, and power LED connector; 6-pin header
I S1	ISA 120-pin slot connector
U18, U19	SIMM sockets: 4MB standard on a SIMM in U19

Jumper Settings



Jumper settings

Jumper number	Jumper setting	Function
J4	1-2 2-3*	Enables game port Disables game port
J5	1-2* 2-3	Assigns PARALLEL port as LPT1 Assigns PARALLEL port as LPT2
J6	1-2 * 2-3	Assigns COM1 serial port as COM1 Assigns COM1 serial port as COM3 **
J7	1-2 * 2-3	Assigns COM2 serial port as COM2 Assigns COM2 serial port as COM4 **
J8	1-2 * 2-3	Enables diskette drive controller Disables diskette drive controller
J9, J10, J11	2-3 *	Featured
J14	Off* on	Disables IRQ9 for VGA Enables IRQ9 for VGA
J16***	1-2 3-4 5-6	Selects a CPU clock speed of 33 MHz (486SX/33, 486DX33, 486DX2/66, and Pentium OverDrive processor) Selects a CPU clock speed of 50 MHz (DX/50) Selects a CPU clock speed of 25 MHz (486SX/25, 486DX2/50)
J22	off' on	Selects fast speed Selects 8 MHz speed
J34	2-3* 3-4	Selects the system board battery Discharges CMOS memory (this resets the SETUP values to their factory defaults)
J35	1-2. 2-3	Enables the IDE hard disk drive controller Disables the IDE hard disk drive controller
J38	1-2.	Reserved

*Factory setting

** You can use MS-DOS to automatically reassign parallel and serial ports. Check your MS-DOS manual for more information.

***Setting depends on CPU

External cache jumper settings*

Cache size	J25	J26	J27	J28
64KB	1-2	1-2	Off	2-3
128KB	2-3	1-2	1-2	1-2
256KB	2-3	2-3	2-3	2-3

. If you have no external cache installed, the position of these jumpers does not matter.

Processor type jumper settings

Processor type	J17	J19
486DX, DX2, or Pentium OverDrive	1-2,3-4	1-2
486SX	2-3	Off

VGA jumper settings

VGA jumper function	J36	J37
Enable on-board VGA	on	on
Disable on-board VGA	Off	Off

SIMM Installation

Your computer comes with 4MB of memory on a SIMM. You can increase the memory up to 64MB by installing 1MB, 2MB, 4MB, 8MB, 16MB, and 32MB SIMMs in the computer's two SIMM sockets. The following table shows the possible SIMM configurations; do not install memory in any other configuration.

SIMM configuration

Bank 0	Bank 1	Total memory
4MB	X	4MB
4MB	1MB	5MB
4MB	2MB	6MB
4MB	4MB	8MB
8MB	X	8MB
8MB	1MB	9MB
8MB	2MB	10MB
4MB	8MB	12MB
8MB	4MB	12MB
8MB	8MB	16MB
16MB	X	16MB
16MB	1MB	17MB
16MB	2MB	18MB
16MB	4MB	20MB
16MB	8MB	24MB
16MB	16MB	32MB
32MB	X	32MB
32MB	1MB	33MB
32MB	2MB	34MB
32MB	4MB	36MB
32MB	8MB	40MB
16MB	32MB	48MB
32MB	16MB	48MB
32MB	32MB	64MB

Use tin-plated (preferably), 32-bit or 36-bit, 72-pin, fast-page mode SIMMs that operate at an access speed of 70ns or faster. Be sure all the SIMMs operate at the same speed.

Video Memory

This system comes with 1MB of video memory. You can increase the video memory to 2MB by installing two video DRAM, 40-pin, 256KB x 16-bit, ZIP (Zig-zag Inline Package) chips.

For the memory to work properly, you must install one chip in each socket.

Resolutions and Colors

Resolution	Memory requirements (MB)	Color	Vertical frequencies (Hz)	Remarks
640 x 480	1	256	60/72	8 bits/pixel
	1	32K/64K	60	16 bits/pixel
	1	16.8M (True Color)	60	24 bits/pixel
800 x 600	1	16	56/60/72	4 bit planes
	1	256	56/60/72	8 bits/pixel
	1	32K/64K	56	16 bits/pixel
1024 x 768	1	16	43.5/60/70/72	4 bit planes*
	1	256	43.5/60/70/72	8 bits/pixel*
	2	64K	43.5	16 bits/pixel*
1280x1024	1	16	43.5	4 bit planes**
	2	256	43.5	8 bits/pixel**

*Non-interlaced and interlaced

**Interlaced

External Cache

You can install 64KB, 128KB, or 256KB of external cache on this system.

- To install 64KB of external cache, use eight SRAM, 28-pin, 8x8, 20ns DIP chips, and one 8x8, 20ns tag chip
- To install 128KB of external cache, use four SRAM, 28-pin, 32 x 8, 20ns DIP chips, and one 8 x 8, 20ns tag chip
- To install 256KB of external cache, use eight SRAM, 28-pin, 32 x 8, 20ns DIP chips, and one 32 x 8, 20ns tag chip
- To install any cache on a 486DX/50 system, make sure the tag chip is a 15ns chip.

For the cache memory to work properly, you must install chips in the following configuration (each bank contains four cache memory sockets).

Cache memory configurations

Bank 0	Bank 1	Tag SRAM	Total cache
U20,21,22,23	U29,30,31,32	U36	
8Kx8	8Kx8	8Kx8	64KB
32Kx8	X	8Kx8	128KB
32Kx8	32Kx8	32Kx8	256KB

Microprocessor Upgrades

The computer's processor can be upgraded by replacing the existing microprocessor with a faster one. You can either purchase an upgrade kit from Epson or buy the individual components separately, as listed in the following table.

Microprocessor upgrade components

Part	Manufacturer
486SX/25 processor	Intel
486SX/33 processor	Intel
486DX/33 processor	Intel
486DX/50 processor	Intel
486DX2/50 processor	Intel
486DX2/66 processor	Intel
Pentium OverDrive processor	Intel
Heat sink*	Tennmax Trading Corp.
Heat sink and fan**	Tennmax Trading Corp.

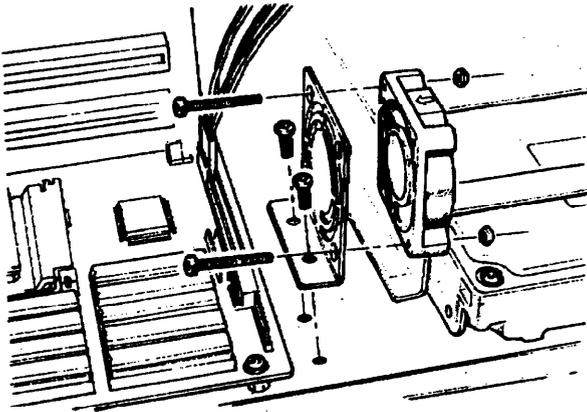
*For the SX/25, SX/33, and DX/33 processors

**For the DX/50, DX2/50, DX2/66, and Pentium OverDrive processor

SX/25, SX/33, and DX/33 processors require a heat sink. DX/50, DX2/50, DX2/66, and Pentium OverDrive processors require a heat sink and a fan. Make sure jumpers J16, J17, and J19 are set correctly for the new processor.

Fan Installation

Some upgrade kits for processors that require both a heat sink and a fan contain a separate fan assembly. Secure the fan to the bracket using the long screws and the nuts. Then secure the bracket to the chassis with the short screws. Connect the fan connector to J12, aligning the small triangle on the case of the connector with pin 1.



Hard Disk Drive Types

This system comes with a hard disk auto-sensing feature. When you press Enter with the cursor positioned on the Autotype Fixed Disk option in SETUP, the system detects the type of hard disk drive you have installed and fills in the drive information using values in the following table.

Hard disk drive types

Type	Size* (MB)	Cylinders	Heads	Sectors/track	Landing zone	Write precomp	Epson drive
1	85	903	4	46	903	None	CP30084E
2	121	762	8	39	762	None	CP30104H
3	106	1024	12	17	1024	None	
4	65	940	8	17	615	300	
5	49	940	6	17	940	512	
6	170	903	8	46	903	None	CP30174E
7	171	332	16	63	332	None	
8	213	1024	12	34	1024	None	
9	117	900	15	17	901	None	
10	341	768	14	62	768	None	
11	528	1024	16	63	1024	None	
12	52	855	7	17	855	None	
13	170	1010	6	55	1010	None	AC1170
14	255	1010	9	55	1010	None	AC2250
16	341	1010	12	55	1010	None	AC2340
17	212	989	12	35	989	None	
18	59	977	7	17	977	None	
19	62	1024	7	17	1023	512	
20	31	733	5	17	732	300	
21	127	919	16	17	919	None	ELS127A
22	31	733	5	17	733	300	
23	170	1011	15	22	1011	None	ELS170A
24	245	723	13	51	723	None	LPS240A
25	252	895	10	55	895	None	CP30254
26	343	665	16	69	665	None	CP30344
27	528	1024	16	63	1024	None	
28	42	977	5	17	977	None	
29	131	1002	8	32	1002	None	
30	245	967	16	31	967	None	
31	345	790	15	57	790	None	
32	42	809	6	17	809	128	
33	50	830	7	17	830	None	
34	72	830	10	17	830	None	
35	44	1024	5	17	1024	None	
36	71	1024	8	17	1024	None	
37	42	615	8	17	615	128	
38	109	1024	8	26	1024	None	
39	72	925	9	17	925	None	
40	80	1024	9	17	1023	None	
41	119	918	15	17	917	None	
42	133	1024	15	17	1023	None	
43	143	823	10	34	822	None	
44	84	969	5	34	968	None	
45	118	969	7	34	968	None	

* Actual formatted size may be slightly different than size on drive label; you cannot change this value.

Some older or preformatted drives do not support the auto-sensing feature. If the parameters displayed do not match the parameters of your hard disk drive, you can define your own drive type in SETUP.

Drive Option Information

Hard disk drive options for 1-inch IDE drives

Parameters	Conner					Quantum		Western Digital		
	CP-30084E	CP-30104H	CP-30174E	CP-30254	CP-30344	ELS170AT	LPS240AT	AC1170	AC2250	AC2340
Formatted capacity (MB)	85	120	170	250	340	170	245	170	240	340
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	3.5 x 1	3.5 x 1	3.5 x 1
Weight (lbs)	1.3	1.3	1.3	1.2	1.2	0.91	1.05	1.12	1.12	1.12
Cylinders	1806	1524	1806	1895	2116	1536	1818	2233	2233	2233
Disks	1	2	2	2	2	2	2	1	2	2
Heads	2	4	4	4	4	4	4	2	3	4
Sectors per track	46	39	46	62	63-95	54	44-87	56-96	56-96	56-96
Rotational speed (RPM)	3822	3399	3833	4542	4500	3663	4306	3322	3322	3322
Buffer size (KB)	32	32	32	64	64	32	256	64	64	128
Average seek time (ms)	17	<19	17	14	13	17	16	<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)	3.75 W	3.9 W	3.75 W	3.75 W	3.75 W	4.0 W	4.9 W	5.2 W	5.2 W	5.2 W
Logical parameters										
Cylinders	903	762	903	895	655	1011	723	1010	1010	1010
Heads	4	8	8	10	16	15	13	6	9	12
Precomp zone	0	0	0	0	0	none*	none*	1011	1011	1011
Landing zone	903	762	903	895	655	1011	723	1011	1011	1011
Sectors	46	39	46	55	63	22	51	55	55	55

*Select 1 or more for the precomp value. If neither of these options are available, select the maximum available precomp value.

IDE hard disk drive jumper settings

Model number	Single drive	Master drive	Slave drive
Conner CP30084E	C/D jumpered	C/D jumpered	No jumpers
Conner CP30104H	C/D jumpered	C/D, DSP jumpered	No jumpers
Conner CP30174E	C/D jumpered	C/D jumpered	No jumpers
Conner CP30254	C/D jumpered	C/D jumpered	No jumpers
Conner CP30344	C/D jumpered	C/D jumpered	No jumpers
Quantum ELS170AT	DS jumpered	DS, SP jumpered or DS jumpered	No jumpers
Quantum LPS240AT	DS jumpered *	DS jumpered *	No jumpers *
Western Digital AC1170	No jumpers	5-6 jumpered	3-4 jumpered
Western Digital AC2250	No jumpers	5-6 jumpered	3-4 jumpered
Western Digital AC2340	No jumpers	5-6 jumpered	3-4 jumpered

*CS (cable selection) can be jumpered for any configuration. When CS is used, the drive is a master if pin 28 is grounded and a slave if pin 28 is not grounded.

Diskette drive options

Parameters	3.5" 1.44MB Seiko Epson SMD-349
Storage capacity	1474KB (formatted)
Size, width x height (in)	3.5 x 1
Cylinders	80
Heads	2
Tracks	160
Track density	135 TPI
Power on ready time	<0.5 secs.
Setting time	15 ms
Average latency time	100 ms

DMA Assignments

Level	Assigned device
DMA0	Reserved (8-bit)
DMA1	Reserved (8-bit)
DMA2	FDD controller (8-bit)
DMA3	Reserved (8-bit)
DMA4	Cascade for DMA controller 1
DMA5	Reserved (16-bit)
DMA6	Reserved (16-bit)
DMA7	Reserved (16-bit)

Hardware Interrupts

IRQ no.	Function
IRQ0	Timer output
IRQ1	Keyboard
IRQ2	Cascade from IRQ controller 2
IRQ3	Serial port 2
IRQ4	Serial port 1
IRQ5	Parallel port 2
IRQ6	FDD controller
IRQ7	Parallel port 1
IRQ8	Real-time clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 mouse
IRQ13	Math coprocessor
IRQ14	HDD controller
IRQ15	Reserved

System Memory Map

000FFFFFFh	System BIOS ROM 64MB Duplicated from 0F0000h	64MB (Maximum system memory)
000FF0000h	Reserved for system board: 64KB Duplicated from 0E0000h	
000FE0000h	Extended memory	1MB
00100000h	System BIOS ROM 64KB Default Shadow RAM duplicated at FF0000h	
000F0000h	Unused or I/O expansion ROM 160KB Reserved for ROM on I/O adapters	640KB
000C8000h	VGA BIOS ROM 32KB Default shadow RAM	
000C0000h	VGA text (color): 32KB	
000B8000h	Unused or VGA text (monochrome): 32KB	
000B0000h	Video memory: 64KB Reserved for graphics display buffer	
000A0000h	Conventional system memory 640KB	
00000000h		

System I/O Address Map

Hex address	Assigned device
000 - 01F	DMA controller 1, 8237
020 - 03F	Interrupt controller 1, 8259
022 - 024	Chip set configuration register
040 - 05F	Timer, 8254
060 - 06F	Keyboard controller, 8042
070 - 07F (CMOS)	Real-time clock NMI (non-maskable interrupt) mask
080 - 09F	DMA page register, 74LS612
0A0 - 0BF	Interrupt controller 2, 8259A
0B4, 0B8	AD12 control register
0BC	AD12 control register
0C0 - 0DF	DMA controller 2, 8237
0F0	Clear math coprocessor busy
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
1F0 - 1F8	Hard disk
200 - 207	Game I/O
278 - 27F	Parallel printer port 2
2B0 - 2DF	Alternate enhanced graphics adapter
2E1	GPIO (adapter 0)
2E2, 2E3	Data acquisition (adapter 0)
2F8 - 2FF	Serial port 2
300 - 31F	Prototype card
360 - 363	PC network (low address)
368 - 36B	PC network (high address)
378 - 37F	Parallel printer port 1
380 - 38F	SDLC, bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	SDLC, bisynchronous 1
3B0 - 3BF	Monochrome display and printer adapter
3C0 - 3CF	Enhanced graphics adapter
3D0 - 3DF	Color graphics monitor adapter
3F0 - 3F7	Diskette drive controller
3F8 - 3FF	Serial port 1
6E2, 6E3	Data acquisition (adapter 1)
790 - 793	Cluster (adapter 1)
AE2, AE3	Data acquisition (adapter 2)
B90, B93	Cluster (adapter 2)
EE2, EE3	Data acquisition (adapter 3)
1390 - 1393	Cluster (adapter 3)
22E1	GPIO (adapter 1)
2390 - 2393	Cluster (adapter 4)
42E1	GPIO (adapter 2)
62E1	GPIO (adapter 3)
82E1	GPIO (adapter 4)
A2E1	GPIO (adapter 5)
C2E1	GPIO (adapter 6)
E2E1	GPIO (adapter 7)

Connector Pin Assignments

Parallel port connector pin assignments (CN3)

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 (CN4 and CN5)

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 (CN7 and CN6)

Pin	Signal	Pin	Signal
1	Data	4	+5 VDC
2	NC	5	Clock
3	Ground	8	NC

VGA port connector pin assignments (CN2)

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	GND	15	NC

Power supply connector pin assignments (CN8)

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 (J15)**

Pin	Signal	Pin	Signal
2	REDWC*	20	STEP
4	No connect	22	Write data
6	No connect	24	Write enable
8	INDEX	26	Track 00
10	MotorA	28	Write protect
12	DriveB	30	Read data
14	DriveA	32	Select head
16	MotorB	34	Disk change
18	Direction		

*Active low logic

**All odd-numbered pins are grounds

Hard disk drive connector pin assignments (J30)

Pin	Signal	Pin	Signal	Pin	Signal
1	RESET*	15	D1	29	NC
2	Ground	18	D14	30	Ground
3	D7	17	D0	31	Interrupt
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	Ready*		
14	ID13	28	NC		

*Active low logic

Speaker connector pin assignments (J21)

Pin	Signal
1	VCC
2	Speaker

Optional game port interface pin assignments (J2)

Pin	Signal	Pin	Signal
1	VCC	6	Position 1
2	Button 0	7	Button 1
3	Position 0	8	VCC
4	Ground	9	VCC
5	Ground	10	NC

Optional game port connector pin assignments

Pin	Signal	Pin	Signal	Pin	Signal
1	VCC	8	Position 1	11	NC
2	Button 0	7	Button 1	12	NC
3	Position 0	8	VCC	13	NC
4	Ground	9	VCC	14	NC
5	Ground	10	NC	15	NC

Option card riser board connector pin assignments (S1)

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	IRQ13
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	Ground
A29	SA5	A59	+5 VDC	B29	DACK2#	B59	+5 VDC
A30	SA4	A60	+5 VDC	B30	TC	B60	+5 VDC

*Active low logic

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	RESET	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	LA23	D9	DRQ0
A15	SA16	B9	+12 VDC	C3	LA22	D10	DACK5*
A16	SA15	B10	Ground	C4	LA21	D11	DRQ5
A17	SA14	B11	SMEMW*	C5	LA20	D12	DACK6*
A18	SA13	B12	SMEMR*	C6	LA19	D13	DRQ6
A19	SA12	B13	IOW*	C7	LA18	D14	DACK7*
A20	SA11	B14	IOR*	C8	LA17	D15	DRQ7
A21	SA10	B15	DACK3*	C9	MEMR*	D16	+5 VDC
A22	SA9	B16	DRQ3	C10	MEMW*	D17	MASTER*
A23	SA8	B17	DACK1*	C11	SD8	D18	Ground
A24	SA7	B18	DRQ1	C12	SD9		
A25	SA6	B19	REFRESH*	C13	SD10		

*Active low logic

SIMM sockets (U18, U19)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Ground	19	D10	37	DP1	55	D11
2	Data 0	20	D4	38	DP3	56	D27
3	Data 16	21	D20	39	Ground	57	D12
4	Data 1	22	D5	40	CAS0*	58	D28
5	Data 17	23	D21	41	CAS2*	59	VCC
6	Data 2	24	D6	42	CAS3*	60	D29
7	Data 18	25	D22	43	CAS1*	61	D13
8	Data 3	26	D7	44	RAS0*	62	D30
9	Data 19	27	D23	45	RAS1*	63	D14
10	VCC	28	A7	46	NC	64	D31
11	NC	29	NC	47	WE*	65	D15
12	A0	30	VCC	48		66	NC
13	A1	31	A8	49	D8	67	PD1
14	A2	32	A9	50	D24	68	PD2
15	A3	33	RAS3*	51	D9	69	PD3
16	A4	34	RAS2*	52	D25	70	PD4
17	A5	35	PD2	53	D10	71	NC
18	A6	36	DP0	54	D26	72	Ground

Installation/Support tips

Installing Diskette Drives

Make sure that the drive type has been correctly selected in the SETUP program.

Installing Hard Disk Drives

- To take full advantage of the local bus IDE interface, your hard disk drive must support a 32-bit data path that uses double-word I/O.
- When installing a hard disk drive, see the hard disk drive type tables and use the auto-sensing feature in SETUP to select the correct type number 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 exact parameters.
- Make sure you have installed the local bus IDE drivers on your hard disk and that the CONFIG.SYS file loads the drivers.
- If you install the IDE drivers and also install Paradox for Windows or a SCSI drive, Windows may not run correctly.
- It is recommended that a 16-bit, AT-type hard disk controller be used if you are installing a drive that cannot use the embedded IDE interface. If you install a non-IDE hard disk drive and controller card, you need to disable the built-in IDE hard disk drive interface by moving jumper J35 to position 2-3. If you disable the on-board IDE, you will not be able to benefit from the built-in local bus IDE controller.
- If you plan to install two hard disk drives in the internal bays, you must use flat-head screws (#6-32UNC x 8 FH,M,+) to secure the top drive to the mounting bracket.

- ❑ If you are installing an ESDI hard disk drive, make sure you disable the built-in IDE hard disk drive interface by moving jumper J35 to position 2-3. Also be sure to remove the hard disk drive ribbon connector from the system board.

Floppy Disk Drive Problems

- ❑ If you use a password for the diskette drive access, you must enable the Password on Boot option. If you don't enable this option, you see an error message whenever you try to access the diskette drive.

Overheating Problems

- ❑ Make sure that the DX, DX2, or Pentium OverDrive processor has an adequate heat sink and fan installed to prevent overheating. The Epson CPU upgrade kit comes with a heat sink and a fan. Other manufacturer's kits may not include these items.

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 the Ctrl and Alt keys and the - key on the numeric keypad simultaneously. Try loading the program at low speed and then switching to high speed, if possible.
- ❑ When using 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

- ❑ Although this system will support most full-length option cards, option cards with an I/P connector on the back may not fit into the option slot.
- ❑ Make sure the power requirements of the option cards you install do not exceed the power supply limitations.
- ❑ If the computer locks up, the power supply may be overloaded. On a system with three or more option cards, the installation of a second hard disk drive may overload the power supply.
- ❑ If you are installing a video adapter card that doesn't support VGA, make sure you disable the built-in VGA by changing jumpers J36 and J37 to the Off position.

COM Port Assignment

If you want to assign COM1 as COM3, you must set jumper J6 to position 2-3. If you want to assign COM2 as COM4, you must set jumper J7 to position 2-3.

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.

Information Reference List

Engineering Change Notices

None.

Technical Information Bulletins

None.

Product Support Bulletins

None.

Related Documentation

TM-ACTD4	EPSON ActionDesk 4000 Service Manual
AD4000+ADD	EPSON ActionDesk 4000+ Service Manual Addendum
PL-ACTD4+	EPSON ActionDesk 4000+ Parts Price List
400274700	EPSON ActionDesk 4000+ User's Guide