

Computer Specifications

CPU and Memory

| | |
|-------------------------|--|
| 32-bit CPU | Intel 486SX, DX, or DX2 processor All systems can be upgraded with a faster microprocessor, including SX2, DX4, and Pentium OverDrive processor when available; DX4 processors require an adapter board to regulate voltage |
| System speed | High and low speeds available; high speed is the speed of the microprocessor, low speed is simulated 8 MHz; speed selection through keyboard command or SETUP; 0 watt state memory access at high speed |
| Memory | 4MB RAM standard soldered on the system board; expandable to 40MB (maximum) using 4MB or 16MB SIMMs; SIMMs must be 32- or 36-bit, 72-pin fast-page mode type with 70ns (or faster) access speed |
| ROM | 128KB system BIOS, video BIOS, and SETUP code located in EPROM on main system board |
| Shadow RAM | Supports shadowing of system and video BIOS ROM into RAM |
| Cache | 8KB of internal cache (built into the microprocessor); sockets for 64,128, or 256KB of SRAM external cache (optional) |
| Math coprocessor | On DX and DX2 systems, math coprocessor built into the microprocessor |
| Clock/ calendar | Real-time clock, calendar, and CMOS RAM socketed on main system board with built-in battery backup |

Controllers

| | |
|------------------|--|
| Video | External VESA local bus video card supports high resolution displays (preinstalled on systems sold in the United States); see the video card manual for more information |
| Diskette | Controller on main system board supports up to two diskette drives or one diskette drive and one tape drive or other storage device |
| Hard disk | Local bus IDE interface on main system board supports up to two IDE hard disk drives with built-in controllers. |

Interfaces

| | |
|---------------------|---|
| Monitor | VGA interface on external card for analog or multifrequency VGA monitor; 15-pin, D-shell connector |
| Parallel | One standard 8-bit parallel bi-directional interface built into main system board; I/O address selectable through SETUP; 25-pin, D-shell connector |
| Serial | Two RS-232C, programmable, asynchronous interfaces built into main system board; 9-pin, D-shell connector |
| 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 | Two 16-bit (or 8-bit) I/O expansion slots, ISA compatible, 8 MHz bus speed; two VESA local bus slots, 32 MHz local bus speed; VESA slots can also be used for ISA cards |
| Speaker | Internal |

Mass Storage

| | |
|-------------------------|--|
| Diskette drives | Three half-height drives maximum configurable using the following: 5.25-inch, 1.2MB (high-density) capacity 3.5-inch, 1.44MB (high-density) capacity 5.25-inch, 360KB (double-density) capacity 3.5-inch, 720KB (double-density) capacity Dual diskette drive: 3.5, 1.44MB and 5.25-inch, 1.2MB |
| Hard disk drives | 3½-inch form factor hard disk drive(s), up to half-height size; the first mounted vertically, second mounted horizontally |
| Other devices | Half-height tape drive, CD-ROM, or other storage device; 5¼-inch or 3½-inch with mounting frames |

Keyboard

| | |
|---------------------|---|
| Design | Detachable; two-position height; NumLock and speed settings adjustable through SETUP |
| Layout | 101 or 102 sculpted keys; country-dependent main typewriter keyboard; numeric/cursor control keypad; four-key cursor control keypad; 12 function keys |
| Interface | PS/2-compatible |
| Connector | 6-pin, mini-DIN, male |
| Cable length | 51 inches (1300 mm); coiled |
| Weight | 3 lb (1.36kg) |
| Dimensions | 17.5 inches (446 mm) wide 6.9 inches (175 mm) deep 1.5 inches (37.6 mm) high, without legs 2 inches (51 mm) high, with legs |

Physical Characteristics

| | |
|--------------------------|---|
| Width | 14.8 inches (370 mm) |
| Depth | 16.5 inches (412 mm) |
| Height | 4.8 inches (120 mm) |
| Weight | 16.7 lb (7.5 kg), with one diskette drive and one hard disk, but without keyboard |
| Chassis and cover | Steel-formed, welded, and painted |
| Bezel | Molded ABS plastic |

Power Supply

Power supply specifications

| | |
|------------------------|---|
| Type | 145 Watt, fan-cooled, |
| Input ranges | 90 to 132 and 180 to 264 VAC, switch-selectable |
| Maximum outputs | +5 VDC at 18 Amps +12 VDC at 4.0 Amps, -5 VDC at 0.3 Amp, -12 VDC at 0.3 Amp |
| Frequency | 47 to 63 Hz |

Option slot power limits


| | | | |
|---------------------------|----------|-----------|------------------------|
| Maximum current | +5 Volts | +12 volts | -5 Volts and -12 Volts |
| For each slot | 7 Amps | 1.5 Amps | 0.3 Amp |
| For all four slots | 16 Amps | 3 Amps | 0.3 Amp |

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 9,900 ft (-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) |
| Acoustical noise | 40 dB(A) | N/A | N/A |

Power Source Requirements

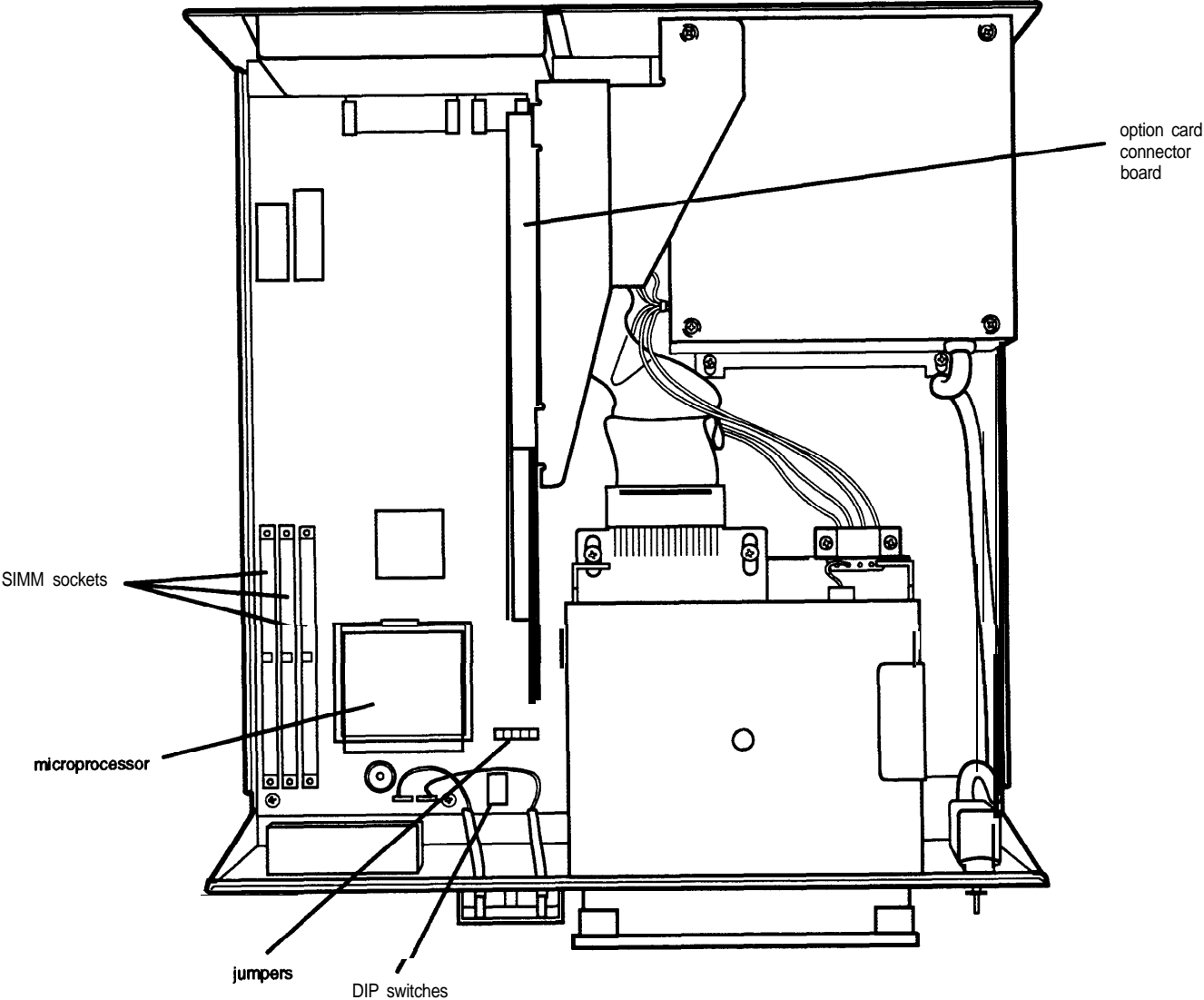
120 Volt power source requirements

| AC plug | Plug type | Reference standards | Power cord |
|---|----------------------------|--|--|
|  | North America 125V, 10A | ANSI C73.11, NEMA 5-15-P, IEC 83 | UL/CSA Listed, Type SJT, no. 18/3AWG, or no. 16/3AWG, or <HAR> 300V, 10A or 13A |

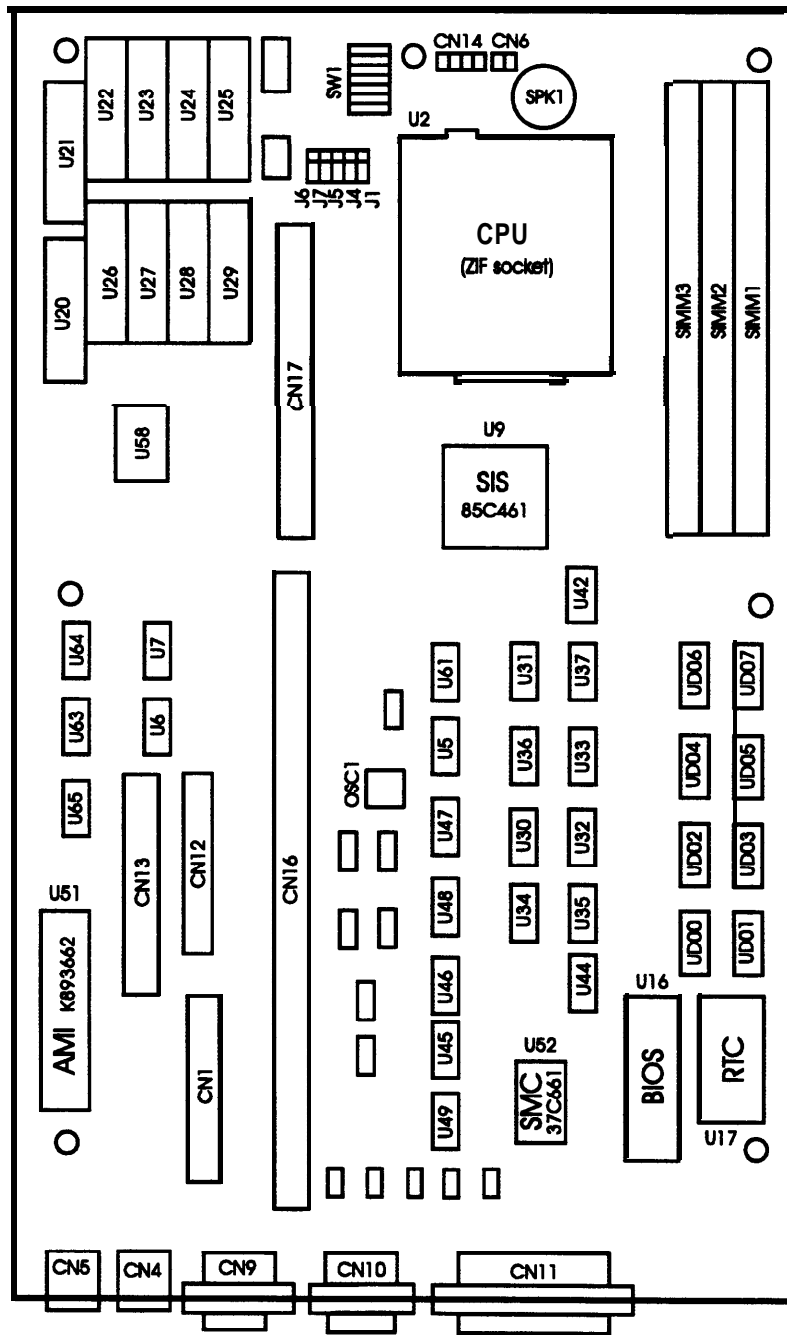
240 Volt power source requirements

| AC plug | Plug type | Reference standards | Power cord |
|---|-------------------------------|---|--|
|  | Europe 240V, 10A to 16A | CEE 7/7 IEC 83 IEC 127 HD 21 | <HAR> 1.00 mm2 300V, 10A |
|  | UK 240V, 10A | BS 1362 BS 1363A IEC 83 IEC 127 HD 21 EN 60 320-1 ASTA mark | <HAR> 1.00 mm2 300V, 10A |
|  | Australia 240V, 10A | AS C112 IEC 127 HD 21 | <HAR> 1.00 mm2 300V, 10A |
|  | North America 240V, 15A | ANSI C73.20, NEMA 6-15-P, IEC 83 UL 198.6 | UL/CSA Listed Type SJT no. 18/3AWG, 300V, 10A |

Major Subassemblies



System Board Layout



System board components

| Socket | Component |
|-------------|---|
| CN1 | Power connector; 12-pin |
| CN2 | Reset connector; 2-pin header (not installed) |
| CN3 | Fan connector; 2-pin header (not installed) |
| CN4 | PS/2 mouse connector; 6-pin mini-DIN |
| CN5 | Keyboard connector; 6-pin mini-DIN |
| CN6 | Speed LED connector; 3-pin header |
| CN8 | Keylock connector; 5-pin header (not installed) |
| CN9 | Serial port labeled COM1; 9-pin D-sub |
| CN10 | Serial port labeled COM2; 9-pin D-sub |
| CN11 | Parallel port connector; 25-pin D-sub |
| CN12 | Diskette drive connector; 34-pin header |
| CN13 | Hard disk drive connector; 40-pin header |
| CN14 | Hard disk drive LED connector; 4-pin header |
| CN15 | Speaker connector; 4-pin header (not installed) |
| CN16 | ISA 120-pin EDGE connector |
| CN17 | VESA 112-pin connector |
| U9 | SIS 85C461 gate array and system, memory, and cache controller with VESA V2.0 support |
| U16 | 27C010 128KB system BIOS EPROM |
| U17 | DS1287A real-time clock controller |
| U20-U29 | Cache SRAM |
| U52 | 37C661 SMC peripheral controller |
| U51 | 8742 keyboard and mouse controller |
| U58 | AD12 local bus IDE controller |
| SIMM1-SIMM3 | SIMMs |

Jumper and DIP Switch Settings

CPU jumper settings

| Jumper | Setting | Function |
|--------|---------|-------------------------------------|
| J1* | A | Select DX, DX2, or Pentiumclass CPU |
| | B | Select SX CPU |
| J10 | A | Clear CMOS settings |
| | B | Reserved |

Factory set according to system CPU

External cache jumper settings

| Cache size | J4 | J5 | J6 | J7 |
|------------|----|----|----|----|
| 0KB* | A | A | A | A |
| 64KB | A | A | A | B |
| 128KB | B | A | B | A |
| 256KB | B | B | A | B |

Factory setting; change jumpers only if external cache chips are installed at factory or by servicer

Clock speed DIP switch settings

| Clock speed* | Switch 1 | Switch 2 | Switch 3 |
|--------------|----------|----------|----------|
| 25 MHz | OFF | OFF | ON |
| 33 MHz | ON | ON | OFF |

* Factory set according to system type; DX2/50 and DX2/66 systems are set at 25 and 33 MHz, respectively

Other DIP switch settings

| Switch | Setting | Function |
|--------|---------|-----------------------------------|
| 4 | ON | Disable password security feature |
| | OFF* | Enable password security feature |
| 5 | ON* | Select color monitor |
| | OFF | Select monochrome monitor |
| 6 | ON | External cache installed |
| | OFF* | External cache not installed |
| 7 | | Reserved for future use |

* Factory setting

SIMM Installation

The computer comes with 4MB of memory soldered on the system board. By installing SIMMs you can increase the amount of memory in your computer up to 40MB.

Each of the three SIMM sockets on the main system board can contain one 4MB or 16MB memory module. The following table shows the possible SIMM configurations; do not install memory in any other configuration.

SIMM configurations

| SIMM 1 | SIMM 2 | SIMM 3 | Total |
|--------|--------|--------|-------|
| 0 | 0 | 0 | 4MB* |
| 4MB | 0 | 0 | 8MB |
| 4MB | 4MB | 0 | 12MB |
| 4MB | 4MB | 4MB | 16MB |
| 16MB | 0 | 0 | 20MB |
| 4MB | 16MB | 0 | 24MB |
| 16MB | 16MB | 0 | 36MB |
| 4MB | 16MB | 16MB | 40MB |

* Standard memory on the system board

Before you install SIMMs, observe the following guidelines to ensure that they will work properly:

- Use only 32- or 36-bit, 72-pin, tin-plated, fast-page mode SIMMs that operate at an access speed of 70ns or faster. Be sure all the SIMMs operate at the same speed.
- Your computer can use any SIMM that complies with industry standards.

Caution

If you install gold-plated SIMMs in the tin-plated SIMM sockets, the SIMMs must be periodically cleaned with a pencil eraser to avoid corrosion.

Supported SIMMs

| Manufacturer | Description | Size | Original manufacturer part number |
|--------------|----------------------|------|-----------------------------------|
| Samsung | 1MB x 36 | 4MB | KMM5361000A(B,C)-7 |
| | 4M x 36 | 16MB | KMM536400A(B,C)-7 |
| | 1M x 32 (w/o parity) | 4MB | KMM5321000BV-7 |
| Goldstar | 1M x 36 | 4MB | GMM7361000SG-70 |
| | 1M x 32 (w/o parity) | 4MB | GMM7321000SG-70 |

External Cache

You can install cache SRAM DIP chips to increase the cache memory to 64KB, 128KB, or 256KB, depending on the amount of cache memory installed at the factory. You must change the settings of jumpers J4 through J7 to match the cache memory size.

Supported *cache memory SRAM DIP chips*

| Socket | Manufacturer | Original manufacturer part number |
|-------------------|--------------|-----------------------------------|
| U20, U21 (15-ns) | Alliance | AS7C256-15PC |
| | Winbond | W24257AK-15 |
| | Samsung | KM68257BP-15 |
| U22 - U28 (20-ns) | Micron | MT5C42568-15 |
| | Alliance | AS7C256-20PC |
| | Winbond | W24266 (7) AK- 20 |
| | UMC | UM61256- 20 |
| Samsun | Samsung | KM68257 BP-20 |
| | Micron - | MT5C42568-15 |

Cache memory configurations

| Bank 0 U22, U23, U24, U25 | Bank 1 U26, U27, U28, U29 | Tag SRAM (U20, U21) | Total cache |
|------------------------------|------------------------------|------------------------|----------------|
| 8 Kx 8 | 8 Kx 8 | 8 Kx 8 | 64KB |
| 32 Kx 8 | | 8Kx8/32Kx8 | 128KB |
| 32Kx8 | 132Kx8 | 132Kx8 | 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 | EPSON part number |
|---|-----------------------|-------------------|
| 486SX/25 processor | Intel | A881541 |
| 486SX/33 processor | Intel | A881551 |
| 486DX/33 processor | Intel | A881561 |
| | Cyrix | A881591 |
| 486DX2/50 processor | Intel | A881571 |
| | Cyrix | A881611 |
| 486DX2/66 processor | Intel | A881581 |
| | Cyrix | A881621 |
| SX2, DX4 and Pentium OverDrive processors, when available | Intel | TBD |
| Heat sink* | Tennmax Trading Corp. | |

- For the DX/33, DX2/50, DX2/66, DX4 and Pentium OverDrive processor

You may also need to change the settings of jumper J1 or DIP switches 1,2, and 3.

Hard Disk Drive Types

The following table lists standard hard disk drive types. Check the table and the drive manufacturer's documentation for the correct drive type number. If none of the types listed matches, select Type 47 (user-defined), and enter the appropriate numbers for the cylinders, heads, precomp, landing zone, and sectors in SETUP.

Hard disk drive types

| Type | Cyln | Head | WPCom | LZone | Sec | Size* (MB) | EPSON drive |
|------|-----------|------|-------|-------|-----|------------|-------------|
| 1 | 1048 | 16 | 65535 | 1048 | 63 | 516 | |
| 2 | 762 | 8 | 65535 | 762 | 39 | 116 | CP30104H |
| 3 | 1024 | 12 | 65535 | 1024 | 17 | 102 | |
| 4 | 940 | 8 | 512 | 940 | 17 | 62 | |
| 5 | 940 | 6 | 512 | 940 | 17 | 47 | |
| 6 | 903 | 8 | 65535 | 903 | 46 | 162 | CP30174E |
| 7 | 332 | 16 | 65535 | 332 | 63 | 163 | |
| 8 | 1024 | 12 | 65535 | 1024 | 34 | 204 | |
| 9 | 900 | 15 | 65535 | 901 | 17 | 112 | |
| 10 | 768 | 14 | 65535 | 768 | 62 | 326 | |
| 11 | 1024 | 16 | 65535 | 1024 | 63 | 504 | |
| 12 | 855 | 7 | 65535 | 855 | 17 | 50 | |
| 13 | 306 | 8 | 128 | 319 | 17 | 20 | |
| 14 | 1010 | 9 | 65535 | 1010 | 55 | 244 | AC2250 |
| 16 | 612 | 4 | 0 | 663 | 17 | 20 | |
| 17 | 989 | 12 | 65535 | 989 | 35 | 203 | AC1210 |
| 18 | 685 | 16 | 65535 | 685 | 38 | 203 | |
| 19 | 1023 | 13 | 65535 | 1023 | 50 | 325 | |
| 20 | 1010 | 12 | 65535 | 1010 | 55 | 325 | AC2340 |
| 21 | 1010 | 6 | 65535 | 1010 | 55 | 163 | AC1170 |
| 22 | 739 | 4 | 65535 | 739 | 40 | 58 | |
| 23 | 739 | 8 | 65535 | 739 | 40 | 115 | |
| 24 | 927 | 15 | 65535 | 927 | 17 | 115 | |
| 25 | 895 | 10 | 65535 | 895 | 55 | 240 | CP30254 |
| 26 | 665 | 16 | 65535 | 665 | 63 | 327 | CP30344 |
| 27 | 903 | 4 | 65535 | 902 | 46 | 81 | CP30084E |
| 28 | 826 | 16 | 65535 | 826 | 63 | 407 | |
| 29 | 1002 | 8 | 65535 | 1002 | 32 | 125 | |
| 30 | 967 | 16 | 65535 | 967 | 31 | 239 | |
| 31 | 790 | 15 | 65535 | 790 | 57 | 330 | |
| 32 | 683 | 16 | 65535 | 682 | 38 | 203 | |
| 33 | 901 | 5 | 65535 | 900 | 53 | 117 | |
| 34 | 723 | 13 | 65535 | 722 | 51 | 234 | LPS240AT |
| 35 | 980 | 10 | 65535 | 979 | 17 | 81 | |
| 36 | 1024 | 12 | 65535 | 1024 | 34 | 204 | |
| 37 | 925 | 9 | 65535 | 925 | 17 | 69 | |
| 38 | 1024 | 9 | 65535 | 1024 | 17 | 77 | |
| 39 | 767 | 14 | 65535 | 767 | 62 | 325 | |
| 40 | 820 | 6 | 65535 | 820 | 17 | 41 | |
| 41 | 1023 | 10 | 65535 | 1023 | 17 | 85 | |
| 42 | 1001 | 15 | 65535 | 1001 | 17 | 125 | |
| 43 | 978 | 14 | 65535 | 978 | 35 | 234 | |
| 44 | 919 | 16 | 65535 | 919 | 17 | 122 | |
| 45 | 1011 | 15 | 65535 | 1011 | 22 | 163 | ELS170AT |
| 46 | 828 | 10 | 65535 | 827 | 34 | 137 | |
| 47 | USER TYPE | | | | | | |

- Actual formatted size may be slightly different than size on drive label.

Drive Option Information

Hard disk drive options for 1-inch IDE drives

| Parameters | Connor | | | | | Quantum | | Western Digital | | | |
|---------------------------|-----------|-----------|-----------|----------|----------|----------|----------|-----------------|---------|---------|---------|
| | CP-30084E | CP-30104H | CP-30174E | CP-30254 | CP-30344 | ELS170AT | LPS240AT | AC1170 | AC1210 | AC2250 | AC2340 |
| Formatted capacity (MB) | 85 | 120 | 170 | 250 | 340 | 170 | 245 | 170 | 210 | 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 | 4 x 1 | 4 x 1 | 4 x 1 | 4 x 1 |
| Weight (lb) | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 0.91 | 1.05 | 1.12 | 1.12 | 1.12 | 1.12 |
| Cylinders | 1806 | 1524 | 1806 | 1895 | 2116 | 1536 | 1818 | 2233 | 2721 | 2233 | 2233 |
| Disks | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 |
| Heads | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | 3 | 4 |
| Sectors per track | 46 | 39 | 46 | 62 | 63-95 | 54 | 44-87 | 56-96 | 55-99 | 56-96 | 56-96 |
| Rotational speed (RPM) | 3822 | 3399 | 3833 | 4542 | 4500 | 3663 | 4306 | 3322 | 3314 | 3322 | 3322 |
| Buffer size (KB) | 32 | 32 | 32 | 64 | 64 | 32 | 256 | 64 | 128 | 64 | 128 |
| Average seek time (ms) | 17 | <19 | 17 | 14 | 13 | 17 | 16 | <13 | <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 | 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 | 5.2 W |
| Logical parameters | | | | | | | | | | | |
| Cylinders | 903 | 762 | 903 | 895 | 655 | 1011 | 723 | 1010 | 989 | 1010 | 1010 |
| Heads | 4 | 8 | 8 | 10 | 16 | 15 | 13 | 6 | 12 | 9 | 12 |
| Precomp zone | 0 | 0 | 0 | 0 | 0 | none* | none* | 1011 | none* | 1011 | 1011 |
| Landing zone | 903 | 762 | 903 | 895 | 655 | 1011 | 723 | 1011 | 989 | 1011 | 1011 |
| Sectors | 46 | 39 | 46 | 55 | 63 | 22 | 51 | 55 | 35 | 55 | 55 |

- Select 1 or none for the precomp value. If neither of these options are available, select the maximum available precomp value.

IDE hard disk drive jumper settings

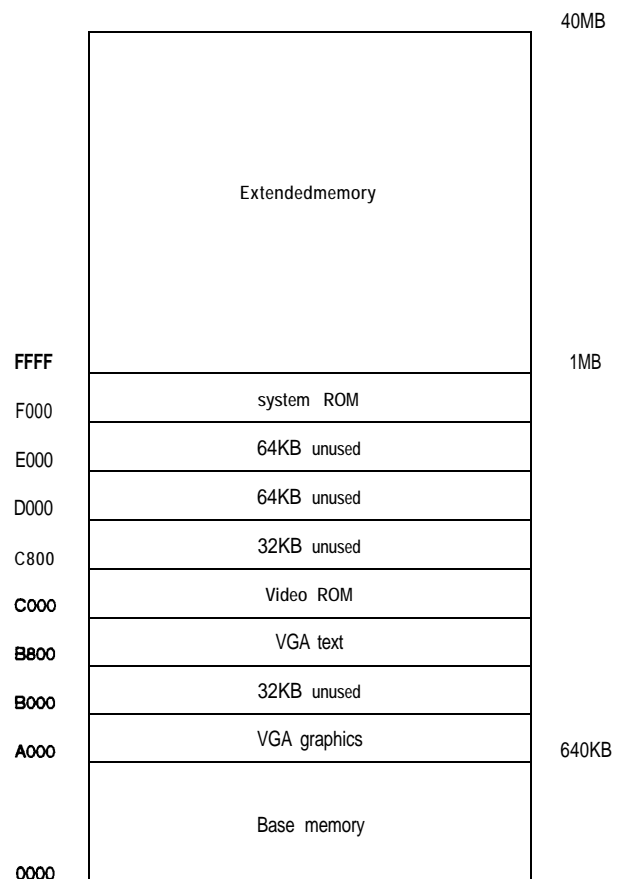
| Model number | Single drive | Master drive | Slave drive |
|------------------------|---------------|--------------------------------|--------------|
| Conner CP30084E | C/D jumpered | C/D jumpered | No jumpers |
| Conner CP30104H | C/D jumpered | C/D, DSP jumpered | No jumpers |
| Conner CP30174E | 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 * | SP and DS jumpered * | No jumpers * |
| Western Digital AC1170 | No jumpers | MA jumpered | SL jumpered |
| Western Digital AC1210 | No jumpers | MA jumpered | SL jumpered |
| Western Digital AC2250 | No jumpers | MA jumpered | SL jumpered |
| Western Digital AC2340 | No jumpers | MA jumpered | SL jumpered |

- CS (cable selection) can be jumpered for any configuration. When CS is used, the drive is a master if pin 26 is grounded, or a slave if pin 26 is not grounded.

Diskette and magneto optical drive options

| Parameters | 3.5" 1.44MB Seiko EPSON SMD-349 | Combination 3.5"/5.25" FDD EPSON SD880-002 | Magneto Optical Drive EPSON OMD-5010 |
|----------------------------|--|---|--|
| Formatted storage capacity | 1474KB | 1474KB/ 1229KB | 128MB |
| Size, width x height (in) | 3.5 x 1 | 5.8 x 1.65 | 4.0 x 1.6 |
| Cylinders | 80 | 80/80 | R/W laser |
| Heads | 2 | 2/2 | 10,000 |
| Tracks | 160 | 160/160 | 10,000 |
| Track density | 135 TPI | 135 TPI/96 TPI | 15,875 TPI |
| Power-on ready time | <0.5 secs. | 500 ms/ 500 ms | 3.5/5.0 ms |
| Setting time | 15 ms | 15 ms/15 ms | N/A |
| Average latency time | 100 ms | 100 ms/83 ms | 8.3 ms |

System Memory Map



DMA Assignments

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

Hardware Interrupts

| IRQ no. | Function |
|---------|---------------------------------|
| IRQ0 | Timeout 0 (internal connection) |
| IRQ1 | Keyboard |
| IRQ2 | Cascade IRQ9 |
| IRQ3 | Serial port 2 |
| IRQ4 | Serial port 1 |
| IRQ5 | Parallel port 2 |
| 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 | Hard disk drive controller |
| IRQ15 | Available |

System I/O Address Map

| Hex address | Assigned device |
|------------------|---|
| 000 - 01F | DMA controller 1, 8237A-5 |
| 020 - 03F | Interrupt controller 1, 8259A, master |
| 022 - 024 | Chip set configuration register |
| 040 - 05F | Timer, 8254-2 |
| 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 |
| 0C0 - 0DF | DMA controller 2, 8237A-5 |
| 0F0 | Clear math coprocessor busy |
| 0F1 | Reset math coprocessor |
| 0F8 - 0FF | Math coprocessor |
| 1F0 - 1F8 | Hard disk |
| 200 - 207 | Game I/O |
| 1ED | CPU speed detection |
| 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 | PC network (low address) |
| 368 - 36B | PC network (high address) |
| 378 - 37F | Parallel printer port 1 |
| 380 - 38F | SDLC, bisynchronous 2 |
| 390 - 393 | Cluster |

System I/O address map (continued)

| Hex address | Assigned device |
|-------------|--|
| 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 | FDD 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 | GPIB (adapter 1) |
| 2390 - 2393 | Cluster (adapter 4) |
| 42E1 | GPIB (adapter 2) |
| 62E1 | GPIB (adapter 3) |
| 82E1 | GPIB (adapter 4) |
| A2E1 | GPIB (adapter 5) |
| C2E1 | GPIB (adapter 6) |
| E2E1 | GPIB (adapter 7) |

I/O addresses (000-0FF) are reserved for the system board
I/O addresses (100-3FF) are available on the I/O channel

Connector Pin Assignments

Mouse connector pin assignments (CN4)

| Pin | Signal | Pin | Signal |
|-----|------------|-----|-------------|
| 1 | Mouse data | 4 | +5 VDC |
| 2 | Reserved | 5 | Mouse clock |
| 3 | Ground | 6 | Reserved |

Keyboard connector pin assignments (CN5)

| Pin | Signal | Pin | Signal |
|-----|---------------|-----|---------------|
| 1 | Keyboard data | 4 | +5 VDC |
| 2 | Resewed | 5 | Keyboard data |
| 3 | Ground | 6 | Resewed |

Serial port connector pin assignments (CN9, CN10)

| 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 | Signal ground interference | 9 | Ring indicator |
| 5 | Data set ready | | |

Parallel port connector pin assignments (CN11)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|-----------|-----|---------------|
| 1 | Strobe | 10 | Data 8 | 19 | Signal ground |
| 2 | Data 0 | 11 | Ack | 20 | Signal ground |
| 3 | Data 1 | 12 | Busy | 21 | Signal ground |
| 4 | Data 2 | 13 | Paper out | 22 | Signal ground |
| 5 | Data 3 | 14 | Select | 23 | Signal ground |
| 6 | Data 4 | 15 | Auto feed | 24 | Signal ground |
| 7 | Data 5 | 16 | Error | 25 | Signal ground |
| 8 | Data 6 | 17 | Init | | |
| 9 | Data 7 | 18 | Selectin | | |

Power connector pin assignments (CN1)

| 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 (CN12)

| Pin* | Signal | Pin* | Signal |
|------|-----------|------|---------------|
| 2 | RPM | 20 | Step pulse |
| 4 | NC | 22 | Write data |
| 6 | NC | 24 | Write enable |
| 8 | Index | 26 | Track 0 |
| 10 | MotorA | 28 | Write protect |
| 12 | DriveB | 30 | Read data |
| 14 | DriveA | 32 | Select head |
| 16 | MotorB | 34 | Disk change |
| 18 | Direction | | |

* All other pins are grounds

Hard disk drive connector pin assignments (CN13)

| 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 | Key (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 | NC | | |
| 14 | D13 | 28 | ALE | | |

*Active low logic

Hard disk drive LED connector pin assignments (CN14)

| Pin | Signal |
|-----|--------|
| 1 | VCC |
| 2 | HDD |
| 3 | HDD |
| 4 | VCC |

Speed indicator LED connector pin assignments (CN6)

| Pin | Signal |
|-----|--------|
| 1 | VCC |
| 2 | TURBO |
| 3 | Ground |

Speaker connector pin assignments (CN15)

| Pin | Signal |
|-----|--------|
| 1 | VCC |
| 2 | NC |
| 3 | Ground |
| 4 | SPKD |

SIMM connector pin assignments (SMM1-SIMM3)

| 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

Option card riser board connector pin assignments (CN16)

| Pin | A | B | Pin | A | B |
|-----|--------|---------|-----|---------|---------|
| 60 | +5 V | +5 V | 30 | SA4 | T/C |
| 59 | +5 V | +5 V | 29 | SA5 | DACK2 |
| 58 | Ground | Ground | 28 | SA6 | IRQ3 |
| 57 | Ground | Ground | 27 | SA7 | IRQ4 |
| 56 | Ground | Ground | 26 | SA8 | IRQ5 |
| 55 | SD15 | Ground | 25 | SA9 | IRQ6 |
| 54 | SD14 | Master | 24 | SA10 | IRQ7 |
| 53 | SD13 | +5 V | 23 | SA11 | SYSCLK |
| 52 | SD12 | DRQ7 | 22 | SA12 | REFRESH |
| 51 | SD11 | DACK7 | 21 | SA13 | DRQ1 |
| 50 | SD10 | DRQ6 | 20 | SA14 | DACK1 |
| 49 | SD9 | DACK6 | 19 | SA15 | DRQ3 |
| 48 | SD8 | DRQ5 | 18 | SA16 | DACK3 |
| 47 | MEMW | DACK5 | 17 | SA17 | IOR |
| 46 | MEMR | DRQ0 | 16 | SA18 | IOW |
| 45 | LA17 | DACK0 | 15 | SA19 | SMSMR |
| 44 | LA16 | IRQ14 | 14 | AEN | SMEMW |
| 43 | LA19 | IRQ15 | 13 | IOCHRDY | Ground |
| 42 | LA20 | IRQ12 | 12 | SD0 | +12 V |
| 41 | LA21 | IRQ11 | 11 | SD1 | 0WS |
| 40 | LA22 | IRQ10 | 10 | SD2 | -12V |
| 39 | LA23 | IOCS16 | 9 | SD3 | DRQ2 |
| 38 | SBHE | MEMCS16 | 8 | SD4 | -5V |
| 37 | +5 V | +5 V | 7 | SD5 | IRQ9 |
| 36 | Ground | +5 V | 6 | S1D6 | +5V |
| 35 | Ground | Ground | 5 | SAD7 | RSTDRV |
| 34 | SA0 | Ground | 4 | IOCHK | Ground |
| 33 | SA1 | OSC | 3 | Ground | Ground |
| 32 | SA2 | +5 V | 2 | Ground | +5 V |
| 31 | SA3 | BALE | 1 | +12 V | +12 V |

EPSON Endeavor VL

VESA expansion slot pin assignments

| Pin | A | B | Pin | C | D |
|-----|--------|--------|-----|--------|---------|
| 1 | VD1 | VD0 | 1 | VLRDY | BRDY |
| 2 | VD3 | VD2 | 2 | VLDEV1 | BLAST |
| 3 | VD5 | VD4 | 3 | VLDEV2 | LDEV3 |
| 4 | VD7 | VD6 | 4 | LGNT2 | LGNT1 |
| 5 | VD9 | VD8 | 5 | LREG2 | LREQ1 |
| 6 | VD11 | VD10 | 6 | LREG3 | LGNT3 |
| 7 | VD13 | VD12 | 7 | +5 V | +5 V |
| 8 | VD15 | VD14 | 8 | +5 V | +5 V |
| 9 | Ground | Ground | 9 | VLCLK2 | VLCLK1 |
| 10 | Ground | Ground | 10 | Ground | Ground |
| 11 | Ground | Ground | 11 | Ground | Ground |
| 12 | VD17 | VD16 | | | |
| 13 | VD19 | VD18 | | | |
| 14 | VD21 | VD20 | | | |
| 15 | VD23 | VD22 | | | |
| Pin | A | B | Pin | A | B |
| 16 | VD25 | VD24 | 31 | A12 | A13 |
| 17 | VD27 | VD26 | 32 | A10 | A11 |
| 18 | VD29 | VD28 | 33 | A8 | A9 |
| 19 | VD31 | VD30 | 34 | A6 | A7 |
| 20 | +5 V | +5 V | 35 | A4 | A5 |
| 21 | +5 V | +5 V | 36 | A2 | A3 |
| 22 | A30 | A31 | 37 | Ground | Ground |
| 23 | A28 | A29 | 38 | Ground | Ground |
| 24 | A26 | A27 | 45 | ADS | EADS |
| 25 | A24 | A25 | 39 | NC | BS16 |
| 26 | A22 | A23 | 40 | VLKEN | VLRESET |
| 27 | A20 | A21 | 41 | BE0 | D/C |
| 28 | A18 | A19 | 42 | BE1 | M/I/O |
| 29 | A16 | A17 | 43 | BE2 | W/R |
| 30 | A14 | A15 | 44 | BE3 | CPURDY |
| | | | 45 | ADS | EADS |

Option Card Riser Board

The option card riser board contains four ISA option card slots and two VL₋bus slots

ISA option card slot connector pin assignments (1-4)

| Pin | Signal | Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|-----|---------|
| A1 | IOCHK | B1 | Ground | C1 | SBHE | D1 | MEMCS16 |
| A2 | SD7 | B2 | RESET | C2 | LA23 | D2 | IOCS16 |
| A3 | SD6 | B3 | +5 V | C3 | LA22 | D3 | IRQ10 |
| A4 | SD5 | B4 | IRQ9 | C4 | LA21 | D4 | IRQ11 |
| A5 | SD4 | B5 | -5 V | C5 | LA20 | D5 | IRQ12 |
| A6 | SD3 | B6 | DRQ2 | C6 | LA19 | D6 | IRQ15 |
| A7 | SD2 | B7 | -12 V | C7 | LA18 | D7 | IRQ14 |
| A8 | SD1 | B8 | OWS | C8 | LA17 | D8 | DACK0 |
| A9 | SD0 | B9 | +12 V | C9 | MEMR | D9 | DRQ0 |
| A10 | IORDY | B10 | Ground | C10 | MEMW | D10 | DACK5 |
| A11 | AEN | B11 | SMEMW | C11 | SD8 | D11 | DRQ5 |
| A12 | SA19 | B12 | SMEMR | C12 | SD9 | D12 | DACK6 |
| A13 | SA18 | B13 | IOW | C13 | SD10 | D13 | DRQ6 |
| A14 | SA17 | B14 | IOR | C14 | SD11 | D14 | DACK7 |
| A15 | SA16 | B15 | DACK3 | C15 | SD12 | D15 | DRQ7 |
| A16 | SA15 | B16 | DRQ3 | C16 | SD13 | D16 | +5 V |
| A17 | SA14 | B17 | DACK1 | C17 | SD14 | D17 | MASTER |
| A18 | SA13 | B18 | DRQ1 | C18 | SD15 | D18 | Ground |

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| A19 | SA12 | B19 | REF |
| A20 | SA11 | B20 | SYSCLK |
| A21 | SA10 | B21 | IRQ7 |
| A22 | SA9 | B22 | IRQ6 |
| A23 | SA8 | B23 | IRQ5 |
| A24 | SA7 | B24 | IRQ4 |
| A25 | SA6 | B25 | IRQ3 |
| A26 | SA5 | B26 | DACK2 |
| A27 | SA4 | B27 | TV |
| A28 | SA3 | B28 | BALE |
| A29 | SA2 | B29 | +5 V |
| A30 | SA1 | B30 | OSC |
| A31 | SA0 | B31 | Ground |

VL-bus slot connector pin assignments

| Pin | A | B | Pin | A | B |
|-----|--------|--------|-----|--------|--------|
| 1 | D0 | D1 | 30 | A17 | A16 |
| 2 | D2 | D3 | 31 | A15 | A14 |
| 3 | D4 | Ground | 32 | VCC | A12 |
| 4 | D6 | D5 | 33 | A13 | A10 |
| 5 | D8 | D7 | 34 | A11 | A8 |
| 6 | Ground | D9 | 35 | A9 | Ground |
| 7 | D10 | D11 | 36 | A7 | A6 |
| 8 | D12 | D13 | 37 | A5 | A4 |
| 9 | VCC | D15 | 38 | Ground | WBACK |
| 10 | D14 | Ground | 39 | A3 | BE0 |
| 11 | D16 | D17 | 40 | A2 | VCC |
| 12 | D18 | VCC | 41 | NC | BE1 |
| 13 | D20 | D19 | 42 | RESET | BE2 |
| 14 | Ground | D21 | 43 | D/C | Ground |
| 15 | D22 | D23 | 44 | M/10 | BE3 |
| 16 | D24 | D25 | 45 | W/R | ADS |
| 17 | D26 | Ground | 48 | ROTRTN | LRDY |
| 18 | D28 | D27 | 49 | Ground | LDEV |
| 19 | D30 | D29 | 50 | IRQ9 | LREQ |
| 20 | VCC | D31 | 51 | BRDY | Ground |
| 21 | A31 | A30 | 52 | BLAST | LGNT |
| 22 | Ground | A28 | 53 | ID0 | VCC |
| 23 | A29 | A26 | 54 | ID1 | ID2 |
| 24 | A27 | Ground | 55 | GNMD | ID3 |
| 25 | A25 | A24 | 56 | LCLK | ID4 |
| 26 | A23 | A22 | 57 | VCC | LKEN |
| 27 | A21 | VCC | 58 | LBS18 | LEADS |
| 28 | A19 | A20 | | | |
| 29 | Ground | A18 | | | |

The A side of the connector is the component side of the option card; the B side is the solder side of the option card.

Installation/Support Tips

Installing Diskette Drives

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

Installing Hard Disk Drives

- ❑ When installing a hard disk drive, see the hard disk drive type table to select the correct type number for the drive. If the parameters for your drive are not listed, you can define your own drive type by selecting drive type 47 and entering the drive's exact parameters for this userdefined drive type.
- ❑ 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, use the SETUP program to disable the built-in IDE hard disk drive interface.

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 -** . Try loading the program at low speed and then switching to high speed, if possible.
- CI 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.

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

Make sure that you do not forget the password you set up. If you do:

1. Disable the password by setting DIP switch 4 on the main system board to ON.
2. Then turn the computer on, wait 20 seconds, and turn it off again.
3. Set DIP switch 4 to OFF to enable the password function.
4. Run SETUP to enter a new password, if desired.

You can also enter a hot key designation in SETUP to secure the system from unauthorized users. Once a password and hot key have been set, when the hot key is pressed, the keyboard and mouse lock until the user enters the password.

Information Reference List

Engineering Change Notices

None.

Technical Information Bulletins

None.

Product Support Bulletins

None.

Related Documentation

| | |
|------------|------------------------------------|
| TM-ENDVRVL | EPSON Endeavor VL Service Manual |
| PL-ENDVRVL | EPSON Endeavor VL Parts Price List |
| 400305700 | EPSON Endeavor VL User's Guide |