HP Vectra 286/12 PC

Technical Data

The Hewlett-Packard Vectra 286/12 PC is the new entry-level product in HP's complete line of IBM PC/AT-compatible desktop PCs. This 12-MHz zero wait state, 80286-based PC delivers superior power and performance, and is designed to handle every general-purpose application your business requires.

The HP Vectra 286/12 PC provides the power, compatibility, and growth capability to meet your current and future personal computing needs by combining the power of the 80286 microprocessor, an integrated high-performance video subsystem, and 1 Mbyte of memory.

The HP Vectra 286/12 PC is a member of HP's complete product line of high-quality, industry-standard PCs.

Features

System Processing Unit

- 80286 16-bit microprocessor; clock rate switchable from 12 MHz to 8 MHz
- Five Industry-Standard Architecture (ISA) accessory slots (PC/AT-compatible):
  – One 8-bit slot
  – Four 16-bit slots
  – One proprietary slot for memory expansion board (allows high-speed memory access)
- Three half-height mass storage shelves; two with front access
- Multifunction controller card; occupies one 16-bit slot and includes:
  – Hard disk connector/driver
  – Flexible disk controller
  – One serial port
  – One parallel port
  – (ST-506 hard disk controller Model 20s only)
- Socket for 12-MHz Intel 80C287 coprocessor
- Real-time clock/calendar with battery-backed CMOS Random Access Memory (RAM)
- Mini-DIN connectors for industry-standard IBM PS/2-compatible keyboard and mouse
- Power-on password
- Optional keylock provides system security.

HP Vectra 286/12 PC Configurations

All HP Vectra 286/12 PC configurations have a 12-MHz 80286 microprocessor with 1 Mbyte of main memory, an integrated high-performance VGA sub-system, one serial and one parallel port, and either a 3½-inch (1.44 Mbytes) or a 5¼-inch (1.2 Mbytes) flexible disk drive. A user's manual, software utilities and drivers, and a keyboard with IBM PC/AT-enhanced format are also included.

Model	Flexible Disk	Hard Disk	Disk Controller	Video Adapter	Product Number
1	5¼ inch, 1.2 Mbytes	None	None	Super VGA	D2460A
	3½ inch, 1.44 Mbytes	None	None	Super VGA	D2467A
20	5¼ inch, 1.2 Mbytes	20 Mbytes	ST-506	Super VGA	D2461A
	3½ inch, 1.44 Mbytes	20 Mbytes	ST-506	Super VGA	D2462A
40	5¼ inch, 1.2 Mbytes	42 Mbytes	Embedded-AT	Super VGA	D2463A
	3½ inch, 1.44 Mbytes	42 Mbytes	Embedded-AT	Super VGA	D2464A

Internal Memory
- 1 Mbyte of main memory on all models: 640 Kbytes of this memory are used as conventional memory; the remaining 384 Kbytes can be configured as either extended memory (for Lotus® 1-2-3® Release 3) or as shadow-RAM/expanded memory
- Zero wait-state memory access
- Expanded Memory Manager software provides LIM* 4.0 support for applications using expanded memory
- Shadow-RAM area to accelerate BIOS-coded operations
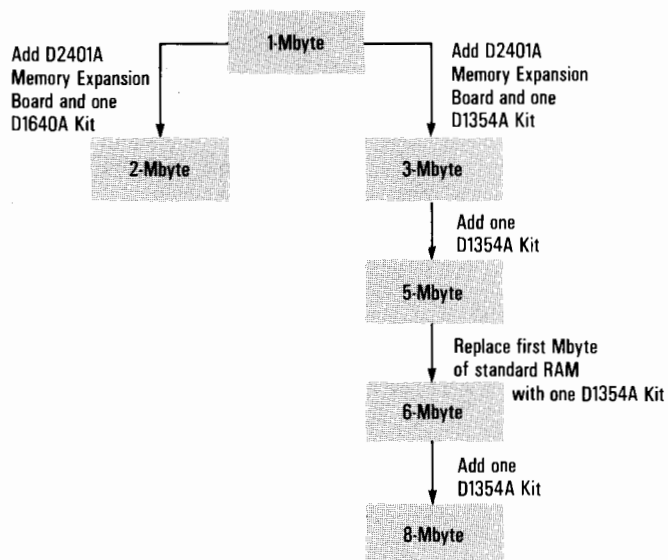- 64 Kbytes of ROM (Read-Only Memory) for BIOS

Memory Expansion
- Memory Expansion Board with eight sockets for single in-line memory modules (SIMMs). Occupies a proprietary slot on the mother board, to allow memory operation at full CPU speed (HP D2401A)
- 2-Mbyte memory upgrade kit (HP D1354A). Up to four such kits can be loaded on the memory expansion board, allowing memory configurations of 3, 5, 6, and 8 Mbytes of total memory
- 1-Mbyte memory upgrade kit (HP D1640A). This kit allows memory to be upgraded to a total of 2 Mbytes. When this kit is installed, memory cannot be upgraded any further.

Keyboard
- Detachable, typewriter-style, 101-key IBM PC/AT-enhanced keyboard layout with adjustable tilt
- Mini-DIN keyboard cable connector (IBM PS/2-compatible)
- Full-travel, step-sculptured keys with tactile feedback and color-coded legends
- Separate numeric and cursor keypads

Memory Upgrade Path

Add D2401A Memory Expansion Board and one D1640A Kit

1-Mbyte

Add D2401A Memory Expansion Board and one D1354A Kit

2-Mbyte

3-Mbyte

Add one D1354A Kit

5-Mbyte

Replace first Mbyte of standard RAM with one D1354A Kit

6-Mbyte

Add one D1354A Kit

8-Mbyte

*Lotus/Intel/Microsoft®

Internal Data Storage

Three internal data storage devices are supported: up to two hard disks or up to two flexible disk-type devices (including tape backup).

- 3½-inch, 1.44-Mbyte flexible disk drive (HP D1667A)
- 5¼-inch, 1.2-Mbyte flexible disk drive (HP 45812A)
- 5¼-inch, 360-Kbyte flexible disk drive (HP 45811A)
- 20-Mbyte, half-height ST-506 hard disk drive (HP D1296A)
- 42-Mbyte embedded-AT controller hard disk drive (HP D1665A)
- 84-Mbyte embedded-AT controller hard disk drive (HP D1666A)
- 40-Mbyte internal tape backup mechanism (HP D1671A)
- 120-Mbyte internal tape backup mechanism (HP D2045A)

Video

- Integrated high-performance VGA subsystem with 256 Kbytes of display memory: Supports the 640 × 480 standard VGA resolution with 16 colors. Also supports MDA, CGA, EGA, and Hercules graphics video standards as well as extended high resolutions:
  320 × 200 with 256 colors
  640 × 350 with 256 colors
  640 × 400 with 256 colors
  640 × 480 with 16 colors
  720 × 540 with 16 colors
  800 × 600 with 16 colors
  1024 × 768 with 4 colors (interlaced)
  132-column text mode
- Extended mode drivers for the HP Super VGA controller: AutoCAD®, AutoShade 9 & 10, Lotus 1-2-3 2.x, WordStar® 3.3, WordPerfect 5.0, Windows/286 2.x, Windows/386 2.x, Generic CAD, VersaCAD 5.3 & 5.4, P-CAD, Ventura Publisher 1.1 & 2.0, GEM/3
- 14-inch HP Video Graphics Color Display (HP D1182A for 110 Volts and HP D1182B for 220 Volts).
- 14-inch HP Monochrome Video Graphics Display
  - HP D1181A—Amber
  - HP D1181G—Green
  - HP D1181W—White
- Recommended high-resolution interlaced displays (not supported):
  - NEC Multisync 3D (14-inch)
  - NEC Multisync 4D (16-inch)
  - Seiko CM-1430 (14-inch)

High-Resolution Video

- The HP High-Resolution Intelligent Graphics Controller model 10 (HP A1086A). Five times faster than conventional VGA, and supports resolutions up to 1024 × 768 with 16 or 256 colors in non-interlaced mode. Permits VGA "pass-through."
- The HP High-Resolution Intelligent Graphics Controller model 20 (HP A1083A). Fifteen times faster than conventional VGA, and supports resolutions up to 1280 × 1024 with 16 or 256 colors in non-interlaced mode. Permits VGA "pass-through."
- Both controllers (A1086A and A1083A) support VGA pass-through and include software drivers for TIGA, DGIS, AutoCAD™ display list, AutoCAD, AutoShade, AutoSketch non-display list, GEM 3.1, Windows 286/386 2.0 and CGI
- 0.5 Mbyte VRAM upgrade Kit (HP A1084A) for HP IGC 10 and 20 (Standard VRAM: 0.5 Mbyte on IGC 10 and 1.0 Mbyte on IGC 20)
- 0.5 Mbyte DRAM upgrade kit (HP A1085A) for HP IGC 10 and 20. On IGC 10, extension module (HP A1087A) is required for DRAM above 0.5 Mbyte.
- 20-inch (HP D1187A) and 16-inch (HP D1188A) high-resolution color displays. Multisync capability provides resolutions ranging from 640 × 480 (VGA; 31.5 KHz) to 1280 × 1024 (64 KHz) in non-interlaced mode. Used with HP A1083A and A1086A high-resolution Intelligent Graphics Controllers or with the HP Super VGA controller (HP D1191A, Cable required in this case)

System Software
Microsoft MS-DOS® 4.01. Includes
DOS Shell, Personal Applications
Manager (PAM), and HP Vectra
Disk Cache. D1151A Opt. ABA
for U.S. English 5¼-inch disks;
D1151B Opt. ABA for U.S. English
3½-inch disks. Localized options
also available.

MS-DOS 3.3. Includes Personal
Applications Manager (PAM),
Volume Expansion utilities, and
disk caching utility. 45951D for
U.S. English 5¼-inch disks;
45951E for English 3½-inch
disks.

Microsoft Operating System/2
(OS/2) 1.1. D1302B Opt. ABA for
U.S. English 5¼-inch disks;
D1302C Opt. ABA for U.S. English
3½-inch disks. 4 Mbytes
recommended.

Utility Disk (standard software
included with all models) includes
Setup program, HP Expanded
Memory Manager Program to
provide Lotus-Intel-Microsoft
(LIM) EMS 4.0 functionality, and
speed-switching utility.

Technical Documentation
- HP Vectra 286/12 PC Hardware
  Technical Reference Manual
  (D2460-90002)
- HP Vectra System BIOS Technical
  Reference Manual (5959-5097)
- HP Vectra 286/12 PC Service
  Manual (D2460-90001)
- HP Vectra PC Accessory Service
  Manual (5959-7738)

**Other Interfaces and
Accessories**
- Serial/Parallel Interface
  (HP 24540B)
- Dual Serial Interface (HP 24541B)
- HP-IB Interface (HP 82335A)
- 1200 bps US Modem (HP 24550A)
- 2400 bps US Modem (HP 24551A)
- HP Basic Language Processor
  (HP 82300C)
- Security Lock (HP 45986A)

Performance Enhancement
- Intel 80C287/12-MHz Numeric
  Coprocessor (HP D2400A)

Input Devices
- HP Mouse with Mini-DIN Inter-face PS/2-compatible interface (HP C1413A)
- HP SketchPro serial (RS-232C) digitizing tablet (HP 7060A)

Physical Characteristics
- System dimensions: (without keyboard) 16.7 inch wide × 15.7 inch deep × 6.3 inch high (42.5 cm × 40 cm × 16 cm)
- System footprint: 1.8 sq ft (0.17 m²), without keyboard
- System weight: (not including keyboard and monitor) 33 lbs (15.0 kg)
- Keyboard dimensions: 18.4 inch wide × 7.8 inch deep × 1.4 inch (2.2 inch) flat (standing) position (46.8 cm × 19.8 cm × 3.4 cm [5.5 cm])
- Keyboard weight: 4.2 lbs (1.9 kg)

Environmental Conditions
- Operating temperature: 41° to 104°F (5° to 40°C)
- Non-operating temperature: −40° to 158°F (−40° to 70°C)
- Humidity: 15% to 80% (noncondensing)
- Operating altitude: 15,000 ft (4.6 km)
- Non-operating altitude: 50,000 ft (15.2 km)
Note: Operating temperature and humidity range may vary with data storage media.

Input Voltage
- Auto-ranging power supply
- 85 to 129 V lower range over 47 to 63 Hz
- 187 to 264 V upper range over 47 to 66 Hz

Power Consumption
- 306 W (337 W) maximum with 110 V (220 V) supply

Heat
- 710 BTUs/hour maximum

Power Availability
- 176 W available peak for 10 sec duration, 134 W continuous
- Accessory cards: 7.2 A at 5 V; 0.39 A at 12 V; 0.25 at −5 V; 0.25 at −12 V

Regulatory Compliance

Radio Frequency Interferences
- FCC Class B
- FTZ 1046/84 Level B (VDE Radio Protection Mark)
- SABS approval
- VCCI approval Class 2
- EN 55022 Class B

Safety Approvals
- UL 478 5th edition
- CSA 22.2 No 220
- TUV-certified
- NEMKO
- IEC 380/435 and 950 compliance
- FEI/SETI

Datacomm
- Germany, UK, Nordic, and Belgium Network

Ergonomics
- Complies with German standard ZH1/618

Computer Museum

HEWLETT PACKARD