COMPAQ DESKPRO 386™
Personal Computer
Features/Specifications

COMPAQ®

It simply works better.

CONTENTS

NOTICE

Introduction

The COMPAQ DESKPRO 386™ Personal Computer utilizing the 16-MHz Intel® 80386 microprocessor, offers advanced technology and high performance in a fully compatible desktop personal computer. The 80386 microprocessor and its 32-bit architecture combine to provide a two to three times performance improvement over 8-MHz 80286-based personal computers. The COMPAQ DESKPRO 386 also provides the capability for adding either a 16-MHz 80387 coprocessor or an 8-MHz 80287 coprocessor. This power allows today's spreadsheet, database, CAD/CAE, and graphics applications to run at higher speeds and will move into the future with advanced CAD/CAE, multi-user environments and artificial intelligence–applications not previously practical on a personal computer. The COMPAQ DESKPRO 386 provides an outstanding combination of performance and features, whatever your application may be.

The COMPAQ DESKPRO 386 also includes the type of value-added features users have come to expect from Compaq. Four storage devices are supported allowing for high-capacity storage needs. Parallel and asynchronous communications interfaces are provided as standard features, and one megabyte of RAM is standard.

The 40-, 70- and 130-Megabyte Fixed Disk Drives offer exceptional performance. The 40- and 70-Megabyte Fixed Disk Drives provide a 5 Megabit per second data transfer rate and an average access time of less than 30 milliseconds. The 130-Megabyte Fixed Disk Drive provides a 10 Megabit per second data transfer rate with an average access time of less than 25 milliseconds.

The COMPAQ DESKPRO 386 supports the COMPAQ® Dual-Mode Monitor, popular on our other desktop products, and the COMPAQ Color Monitor and COMPAQ Enhanced Color Graphics Board. Other options from Compaq provide avenues to configure the COMPAQ DESKPRO 386 to best fit your application needs.

Standard Models and Options

MODEL 40
- 16-MHz 80386 Microprocessor
- Sockets for either a 16-MHz 80387 or an 8-MHz 80287
- One 5¼-Inch 1.2-Megabyte Diskette Drive
- 40-Megabyte Fixed Disk Drive
- One Megabyte of Random Access Memory (RAM)
- COMPAQ Expanded Memory Manager (CEMM)
- Six Available Expansion Slots
- Real-Time Clock
- COMPAQ Enhanced Keyboard
- Asynchronous Communications Interface
- Parallel Printer Interface
- 192-Watt Steady-State Power Supply

MODEL 70
- 16-MHz 80386 Microprocessor
- Sockets for either a 16-MHz 80387 or an 8-MHz 80287
- One 5¼-Inch 1.2-Megabyte Diskette Drive
- 70-Megabyte Fixed Disk Drive
- One Megabyte of Random Access Memory (RAM)
- COMPAQ Expanded Memory Manager (CEMM)
- Five Available Expansion Slots
- Real-Time Clock
- COMPAQ Enhanced Keyboard
- Asynchronous Communications Interface
- Parallel Printer Interface
- 192-Watt Steady-State Power Supply

MODEL 130
- 16-MHz 80386 Microprocessor
- Sockets for either a 16-MHz 80387 or an 8-MHz 80287
- One 5¼-Inch 1.2-Megabyte Diskette Drive
- 130-Megabyte Fixed Disk Drive

MODEL 130 (continued)
- One Megabyte of Random Access Memory (RAM)
- COMPAQ Expanded Memory Manager (CEMM)
- Five Available Expansion Slots
- Real-Time Clock
- COMPAQ Enhanced Keyboard
- Asynchronous Communications Interface
- Parallel Printer Interface
- 192-Watt Steady-State Power Supply

OPTIONS
- 360-Kbyte Diskette Drive
- 1.2-Megabyte Diskette Drive
- 40-Megabyte Fixed Disk Drive
- 40-Megabyte Fixed Disk Drive Backup
- 16-MHz 80387 Coprocessor
- 8-MHz 80287 Coprocessor
- 1-Megabyte Memory Upgrade Kit
- 4-Megabyte Memory Upgrade Kit
- 1- to 2-Megabyte 32-bit Memory Expansion Board
- 4- to 8-Megabyte 32-bit Memory Expansion Board
- .5- to 2.0-Megabyte 16-bit Memory Expansion Board
- 512-Kbyte Memory Upgrade Kit (18-256K chips)
- Asynchronous Communications/Parallel Printer Board
- COMPAQ Dual-Mode Monitor
- COMPAQ Color Monitor
- COMPAQ Enhanced Color Graphics Board
- COMPAQ Video Display Controller Board
- MS-DOS®/BASIC Version 3, Release 3.1
- MS-DOS/BASIC Version 3, Release 3.2
- COMPAQ DESKPRO 386 Technical Reference Guide
- COMPAQ Enhanced Color Graphics Board Technical Reference Guide
- 40-Megabyte Tape Cartridges

COMPAQ
Color Monitor

Security lock

8/16-bit slot for
ESDI fixed
disk drive controller board

32-bit memory
expansion board

32-bit system
memory board

COMPAQ
Enhanced Color
Graphics Board

8/16-bit slot for
multipurpose
fixed disk
controller board

8-bit half-size slot

80287 Coprocessor Socket

80387 Coprocessor Socket

COMPAQ
Enhanced Keyboard
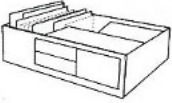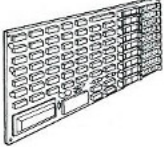
Brightness control

Contrast control

On/off switch

Power
supply

130-Megabyte
full-height
fixed disk drive
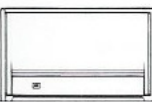
1.2-Megabyte
diskette drive

40-Megabyte
fixed disk drive
backup (tape)

COMPAQ DESKPRO 386 Features/Functions/Benefits

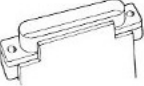| Feature	Function	Benefit
MICROPROCESSOR		
• Intel 80386 microprocessor	• Uses the technology of the 80386 microprocessor and maintains compatibility with the 80286 microprocessor	• Builds on the current 80286 industry standard; thereby protecting existing investments while providing a foundation for future business applications
• 32-bit architecture	• Allows data to process at 32 bits per CPU cycle versus 16 bits or 8 bits in previous computer systems	• Greatly reduces the processing time required for sophisticated business applications, increasing productivity for the user
• 16-MHz processing speed	• When combined with 32-bit architecture, the system is 2-3 times faster than 80286-based personal computers running at 8 MHz	• Increases productivity by processing information faster
• Compatible with 80286 operating systems and application software	• Provides speed modes that simulate the processing speeds of existing personal computers in the market today	• Protects existing hardware and software investment
COPROCESSOR		
• 16-MHz 80387 coprocessor	• Operates at 16 MHz and has a 32-bit data exchange with the 80386	• Less waiting time means users are more productive
	• Compatible with existing 16-bit application programs that offer coprocessor support	• Higher performance and throughput than 8-MHz 80287
	• Increases calculation speed for math-intensive applications such as scientific and CAD/CAE	• Increases productivity of coprocessor applications like CAD packages
• 8-MHz 80287 coprocessor	• Operates at 8 MHz and has a 16-bit data exchange with the 80386	• Less waiting time means users are more productive
	• Increases calculation speed for math-intensive applications such as scientific and CAD/CAE	• Increases productivity of coprocessor applications like CAD packages
EXPANSION SLOTS		
• 8 total slots – 32-bit slot for memory – 4 8/16-bit slots (full-size) – 3 8-bit slots (2 full-size, one half-size)	• Allows for the installation of 5 or 6 expansion boards; such as modems, LAN cards, I/O board, graphics, etc.	• User can customize machine for particular applications, increasing system flexibility
	• Supports existing expansion boards because the slots are 8/16-bit	• Protects users' current hardware investment
RANDOM-ACCESS MEMORY		
• 32-bit System Memory Board – 1 MB soldered on board with sockets for an additional 1 MB	• Accommodates 32-bit memory up to 10 MB on System Memory Board	• Allows for high-speed memory to handle complex tasks while leaving expansion slots open, increasing system versatility
• COMPAQ Expanded Memory Manager (CEMM)	• Supports the Lotus®/Intel®/Microsoft® (LIM) specification, enabling the user to access memory beyond the previous MS-DOS limitation of 640 Kbytes	• Allows fast and efficient manipulation of large amounts of data, eliminating the need to purchase additional hardware options
CLOCK		
• Real-time clock on system board; battery powered	• Provides current date and time upon power-up or reboot	• User saves time by not having to reset clock every time unit is turned on
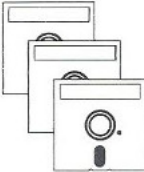
Feature	Function	Benefit

SECURITY LOCK

• Security lock on front of system unit	• Prevents unauthorized access to data	• User can feel comfortable the data on system is secure

MASS STORAGE DEVICES

• Diskette drives – 1.2-MB diskette drive standard on all models – 360-Kbyte diskette drive available as an option – Maximum of two half-height drives	• Supports both 1.2-MB and 360-Kbyte diskette drives, providing compatibility with existing media standards	• Protects the customer's initial software investment
• Fixed disk drives – 40-MB half-height drive with average access <30 milliseconds	• Stores more than 20,000 pages of information	• Eliminates need for 34 diskettes, reducing expense and simplifying handling
	• Half-height drive occupies one-half the space of full-height	• Allows 4 storage devices, which enables users to purchase only the type and quantity of data storage that meets their needs
	• Accesses data on fixed disk in an average time of less than 30/1000 of a second	• Reduces time spent waiting for data to be accessed, increasing productivity
– Optional 40-MB fixed disk drive	• Second 40-MB drive optional in the Model 40 configuration increases total capacity to 80 MB	• User may select the configuration that best fits his needs and budget considerations
– 70-MB full-height drive with average access <30 milliseconds	• Stores more than 35,000 pages of information	• Greater storage capacity eliminates the requirement for up to 59 diskettes
	• Accesses data on fixed disk in an average time of less than 30/1000 of a second	• Reduces time spent waiting for data to be accessed, increasing productivity
– 130-MB full-height drive with average access <25 milliseconds	• Stores more than 65,000 pages of information	• Multiple users have ample space to store data and program files
	• Accesses data on fixed disk in an average time of less than 25/1000 of a second	• Reduces time spent waiting for data to be accessed, increasing productivity
• (ESDI) Enhanced Small Device Interface	• Provides extraordinary media reliability and quick response times	• Increases user productivity by minimizing time spent waiting to access a file
• Backup – 40-MB fixed disk drive backup (tape). Controller is Multipurpose Fixed Disk Controller	• Stores 40 million characters of data from the fixed disk drive onto a removable tape	• Minimizes time required to recover from a loss of data due to situations such as theft or system failure

POWER SUPPLY

• Peak: 220 Watts Steady state: 192 Watts	• Converts AC power to DC and distributes sufficient power to the system to support all available configurations	• Prevents having to replace or augment the existing power supply when a user decides to upgrade the system

COMPAQ DESKPRO 386 Features/Functions/Benefits

	Feature	Function	Benefit
KEYBOARD	• COMPAQ Enhanced (101-key layout) (102-key layout-international)	• Allows input to system incorporating key features such as separate numeric and cursor pads	• Aids 10-key input by following standard 10-key layout • Enables faster cursor movement and easier numeric input
STANDARD INTERFACES	• Parallel printer port	• Allows connection from computer to printer	• Offers customer flexibility in choosing output devices at no incremental cost
	• Asynchronous communications port	• Allows connection of computer to serial devices	
MONITORS and VIDEO BOARDS	• COMPAQ Color Monitor	• Supports both enhanced and color graphics	• Protects user's initial investment by taking advantage of new enhanced graphics software and current color graphics software
		• Dot pitch is .31 mm	• Sharper display with crisper images
	• COMPAQ Dual-Mode Monitor (green or amber)	• Provides the ability to display both high-resolution text and graphics on one screen	• Saves the user money by eliminating the need to purchase separate monitors for text and graphics
		• Allows connection to either the COMPAQ Enhanced Color Graphics Board or the COMPAQ Video Display Controller Board	• Lets the user choose the video board best suited for his work environment
	• COMPAQ Enhanced Color Graphics Board – 3-function support	• Supports enhanced graphics, color graphics and monochrome resolutions	• Provides the user with a choice of display options, increasing system flexibility
	– Standard 256-Kbyte Memory		• Offers the user full functionality without additional costs
	• Displays 16 colors	• Supports the simultaneous display of 16 colors out of possible palette of 64	• Allows increased graphics creativity and functionality
	• COMPAQ Video Display Controller Board – 4 standard interfaces	• Incorporates connectors for the COMPAQ Dual-Mode Monitor, COMPAQ Color Monitor, an RGB monitor, a composite video, and an RF modulator	• Eliminates the necessity of purchasing these standard interfaces, protecting the user's investment
OPERATING SYSTEMS	• MS-DOS Version 3, Release 3.1 Diskettes and Reference Guides or MS-DOS Version 3, Release 3.2 Diskettes and Reference Guides	• Controls the way the computer works with information, loads information into memory and stores information	• Ensures compatibility with installed base of software

The COMPAQ DESKPRO 386 Personal Computer is configured with one megabyte of RAM, and offers extensive memory expansion without using an expansion slot. All 32-bit memory on the COMPAQ DESKPRO 386 is placed on a separate 32-bit System Memory Board, contained in a special 32-bit slot. The 32-bit System Memory Board comes standard with one megabyte of RAM soldered on the board and has sockets for adding an additional megabyte of RAM.

After the second megabyte of RAM has been added to the System Memory Board, one of two different 32-bit memory expansion boards can be added. These are: the 1- to 2-Megabyte 32-bit Memory Expansion Board or the 4- to 8-Megabyte 32-bit Memory Expansion Board. Fully populating these 32-bit expansion boards provides either 4 or 10 megabytes of 32-bit RAM without occupying an additional expansion slot.

If the user needs memory beyond the 4 or 10 megabyte range, install up to two of the .5- to 2-Megabyte 16-bit Memory Expansion Boards. The maximum amount of RAM supported is 14 megabytes. The following flowchart illustrates the COMPAQ DESKPRO 386 Personal Computer memory expansion options.

```
            ┌──────────────────────────────────┐
            │   32-bit SYSTEM MEMORY BOARD      │
            │                                   │
            │   Standard Memory: 1 Megabyte     │
            │   Total Memory: 1 Megabyte        │
            └──────────────────────────────────┘
                            │
                          ADD
                            │
            ┌──────────────────────────────────┐
            │   ONE MEGABYTE UPGRADE KIT        │
            │   to the 32-bit System Memory Board│
            │   Total Memory: 2 Megabytes       │
            └──────────────────────────────────┘
                            │
                          ADD
                         EITHER
              ┌─────────────┴─────────────┐
   ┌────────────────────────┐   ┌────────────────────────┐
   │ 1- to 2-Megabyte 32-bit│   │ 4- to 8-Megabyte 32-bit│
   │   Expansion Board      │   │   Expansion Board      │
   │ Total Memory: 3 Megabytes│ │ Total Memory: 6 Megabytes│
   └────────────────────────┘   └────────────────────────┘
              │                             │
   ┌────────────────────────┐   ┌────────────────────────┐
   │ One Megabyte Upgrade Kit│  │ Four Megabyte Upgrade Kit│
   │ Total Memory: 4 Megabytes│ │ Total Memory: 10 Megabytes│
   └────────────────────────┘   └────────────────────────┘
              │                             │
              └─────────────┬─────────────┘
            ┌──────────────────────────────────┐
            │        Add one or two            │
            │     .5- to 2-Megabyte 16-bit     │
            │   Memory Expansion Boards*       │
            └──────────────────────────────────┘
              ┌─────────────┴─────────────┐
   ┌────────────────────────┐   ┌────────────────────────┐
   │Maximum Memory: 8 Megabytes│ │Maximum Memory: 14 Megabytes│
   └────────────────────────┘   └────────────────────────┘
```

*Because this memory is only 16 data bits wide, any data or programs contained in the 16-bit memory will have slower access than 32-bit memory.

Technical Specifications

STORAGE DEVICE PERFORMANCE

DISKETTE DRIVES	1.2-MEGABYTE	360-KBYTE
LED Indicators		
Read/Write 1.2-Megabyte	Green	N/A
Read/Write 360-Kbyte	Red	Red
Capacity Per Drive	1.2 MB	360Kbytes
Drives Supported	Two	One
Drive Height	Half	Half
Drive Size	5¼-in	5¼-in
Drive Rotation (RPM)	360	300
Transfer Rate (BPS) 1.2/360	500K/300K	250K
Bytes Per Sector	512	512
Sectors Per Track 1.2/360	15/9	9
Tracks Per Side 1.2/360	80/40	40
Access Times		
Track-to-Track (ms)	3	6
Average (ms)	79	80
Settling Time (ms)	15	15
Latency Average (ms)	84	100
Cylinders 1.2/360	80/40	40
Read/Write Heads	2	2

FIXED DISK DRIVES	40-MEGABYTE	70-MEGABYTE	130-MEGABYTE
Standard Configuration	Model 40	Model 70	Model 130
Option Kit (Second 40-Megabyte)	Yes	No	No
LED Indicator	Green	Green	Green
Capacity Per Drive	40MB	70MB	130MB
Drives Supported	Two	One	One
Drive Height	Half	Full	Full
Type	17	12	25
Drive Size	5¼-in	5¼-in	5¼-in
Transfer Rate (BPS)	5M	5M	10M
Bytes Per Sector	512	512	512
Sectors Per Track			
Physically	17	17	34
Logically	17	17	17
Number of Surfaces	5	9	8
Tracks Per Surface	980	925	966
Access Times (Including Settling)			
Track-to-Track (ms)	8	8	5
Average (ms)	<30	<30	23
Maximum (ms)	70	70	45
Cylinders	980	925	966
Read/Write Heads	5	9	8
Logically Addressable Cylinders	980	925	966
Logically Addressable Heads	5	9	16

FIXED DISK DRIVE BACKUP

	40-MEGABYTE TAPE
Drive Height	Half
Approximate Operating Times Per 40 Megabytes (Minutes)	
Backup and Verify	
—Formatted Cartridge	36
—Unformatted Cartridge	110
Restore	18
Format Blank Cartridge	74
Maximum Formatted Capacities	
Per Tape	40 MB
Per Track	2 MB
Per Data Block	16,384 Bytes
Per Sector	1024 Bytes
Mechanical Measurements	
Tape Width	.25 in
Tape Length	205 ft
Tape Speed	
Read/Write (Both Directions)	50 IPS
Rewind/Fast Forward	70 IPS
Tape Format	
Read/Write	Streaming
Track Pattern	Serpentine
Number of Tracks	20
Number of Blocks Per Track	124
Number of Data Sectors Per Block	16
Number of ECC Sectors Per Block	2
Recording Density/Inch	10000 Bits
Flux Reversals/Inch	10000
Track Density/Inch	83
Data Encoding Method	MFM
Data Transfer Rate (BPS)	500K
Error Detection/Correction	CRC/ECC
Tape Cartridge	
Read/Write	3M® DC2000
Read	3M DC1000

EXPANSION SLOTS

Slot 1	32-bit full size (reserved for the 32-Bit System Memory Board).
Slot 2	8-bit full size. Typically used for video display controller board.
Slot 3	8/16-bit full size. User option.
Slot 4	8/16-bit full size. User option.
Slot 5	8-bit full size. User option.
Slot 6	8/16-bit full size. Used for Fixed Disk Drive Controller Board. Models 70 and 130.
Slot 7	8/16-bit full size. Used for Multipurpose Fixed Disk Controller Board (all models).
Slot 8	8-bit half size. User option.

Physical Measurements

SYSTEM UNIT

	U.S.	International
Dimensions:		
Width	19.8 in	50.3 cm
Height	6.4 in	16.2 cm
Depth	16.5 in	41.9 cm
Weight:		
Model 40	42.0 lbs	19.1 kg
Model 70	44.1 lbs	20.0 kg
Model 130	44.1 lbs	20.0 kg
Power Supply:		
Operating Voltage	120 Volts, 60 HZ	220/240 Volts, 50 Hz
Peak Power	220 Watts	Same
Steady State Power	192 Watts	Same
Fuse	5 Amp	4 Amp
Temperature Range:		
Operating	50° to 104°F	10° to 40°C
Nonoperating	50° to 142°F	10° to 60°C
Shipping	−22° to 140°F	−30° to 60°C
Relative Humidity (non-condensing):		
Operating	20% to 80%	Same
Nonoperating	5% to 90%	Same

COMPAQ ENHANCED KEYBOARD

Dimensions:		
Width	19.25 in	48.9 cm
Height	1.50 in	3.8 cm
Depth	8.30 in	21.1 cm
Weight:	3.8 lbs.	1.7 kg

COMPAQ DUAL-MODE MONITOR

Dimensions:		
Width	14.75 in	37.5 cm
Height	10.25 in	26.0 cm
Depth	13.70 in	34.8 cm
Weight:	15.0 lbs	7.9 kg

COMPAQ COLOR MONITOR

Dimensions:		
Width	13.93 in	35.4 cm
Height	11.83 in	30.0 cm
Depth	14.96 in	38.0 cm
Weight:	28.0 lbs	12.8 kg

Q: How fast is the 80386 microprocessor?

A: The COMPAQ DESKPRO 386 runs at 16 MHz. This provides approximately 2 to 3 times the processing performance for typical 16-bit applications developed for 8-MHz 80286-based products.

Q: Can I use a math coprocessor?

A: Yes, Compaq offers either a 16-MHz Intel 80387 or an 8-MHz Intel 80287 coprocessor option kit. Only one coprocessor may be installed at a time. Make sure you set the switch settings on the system board to indicate the presence of the coprocessor and appropriate operating speed.

Q: What performance improvement can I expect from a 16-MHz 80387 coprocessor over an 8-MHz coprocessor?

A: Running current 16-bit application programs that use a coprocessor we have seen performance improvements for the 16-MHz 80387 of up to 70% over an 8-MHz 80287. An exact increase in performance is impossible to state since they are very application dependent, i.e., some programs use the coprocessor more than others.

Q: How much memory is on the System Board?

A: None. One megabyte of RAM is standard on the 32-Bit System Memory Board contained in Slot 1.

Q: How can the one megabyte of standard memory be utilized?

A: On the Supplemental USER PROGRAMS diskette, Compaq has included an installation utility called "INST386" which will allow you to take advantage of the additional 256 Kbytes of RAM beyond the normal 640-Kbyte limit of MS-DOS. This installation utility will allow you to choose how much memory to allocate for expanded memory, virtual disk(s), and/or as a disk cache.

Q: What is the maximum amount of memory supported?

A: Using COMPAQ options you can install up to 14 megabytes of RAM.

Q: What is the maximum amount of RAM allowed in the Lotus/Intel/Microsoft (LIM) Expanded Memory Specification (EMS?)

A: The specification supports up to 8 megabytes.

Q: What is a disk cache?

A: Disk caching is a technique which improves the data access times of fixed disk operations on some programs. This is accomplished by copying the most recently accessed data and the data expected to be accessed next into RAM. Memory transfer is many times faster than normal fixed disk operations.

Q: What applications are well-suited for the disk cache software and how do I install it?

A: Disk intensive applications such as database sorts are ideal candidates to take advantage of the disk cache software. Installation is accomplished with the "INST 386" utility included with each COMPAQ DESKPRO 386.

Q: Is a video display controller board standard in the system?

A: No, due to the diverse environments for which the COMPAQ DESKPRO 386 is designed, the video boards and monitors are sold separately.

Q: What is the COMPAQ Warranty on the COMPAQ DESKPRO 386?

A: Compaq provides a one-year limited warranty from the purchase date.

0287067/5-87

Part No. 108414-001