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## TECHNICAL COMPUTERS PRODUCT OVERVIEW

### Introduction

Hewlett-Packard's technical computers range from multi-tasking, multi-user systems to single user, dedicated workstations. The applications are focused in two areas: 1) engineering/science, and 2) real time automation. Products are also used for other applications, especially by Original Equipment Manufacturers (OEMs) who add value to the products based on their knowledge of particular, specialized market segments.

The strategic end-user focus for this group of products is based on the Manufacturer's Productivity Network (MPN). MPN represents HP's strategy to satisfy computing needs for all functions within a manufacturing environment. The four major functions, represented by four quadrants are: Marketing, Administrative, Factory and Plant Automation, and Engineering Networks.

MPN integrates information involved in these aspects of a manufacturer's operation -- from product design through sales and service. The objective of HP technical computers is to provide products and solutions for half of the MPN -- Factory and Plant Automation and Engineering Networks.



To accomplish this task, HP offers a broad product line containing board computers, modular computers, computer systems, workstation languages, operating systems, data communications, data base management, graphics and applications software. All of these products carry the high level of quality, reliability and support that the Hewlett-Packard Company is known for throughout the world.

## **Engineering/Science**

Hewlett-Packard's strength as a company began in the area of scientific test and measurement instrumentation. This expertise has been put to use in creating the range of engineering and scientific computer products we now offer. Three key attributes made our technical computers popular in engineering and science. First, the products meet the technical professional's need for computationally intensive problem-solving. Whether they are based on HP or vendor technology, they are strong price performance leaders. Applications include simulation, data reduction and analysis, computer-aided design and the whole area of computer-aided work, i.e. technical word processing, etc. This involves all engineering disciplines, as well as physics, chemistry and computer science.

Second, engineering/scientific applications require sophisticated and powerful input/output (I/O) capability. I/O is the method by which computers are connected to instruments, peripherals and other computers. I/O capability is very important in laboratory experimentation and test. HP has played a leading role in instrumentation I/O, as exemplified by the development of the Hewlett-Packard Interface Bus (HP-IB), now the IEEE 488-1978 standard. HP-IB is an instrument interface method which has gained broad acceptance by users and manufacturers of computers, and it has become established as a worldwide interface standard.

The final characteristic of engineering/scientific applications is the wide variety of user interaction required. HP offers a complete family of technical computers designed to meet these requirements and all in a very user friendly interface. Products span the range from single personal workstations, to workstations with up to 32-bit performance, to multi-user, multi-tasking systems with both 16- and 32-bit capabilities.

## **Factory and Plant Automation**

Hewlett-Packard's technical computers had their beginning on the factory floor. Our first computers were designed to control electronic instruments in computer-based production test stations. Since that time, our computer expertise has expanded

with the industry to include monitoring and controlling production equipment and critical processes found in the manufacturing environment.

Typical factory and plant automation applications include facilities monitoring, process control, machine control, and computer-aided test. They also include data analysis and management report generation for production control.

Automating production processes can lead to dramatic productivity gains, gains which are essential to remain competitive in today's marketplace. Hewlett-Packard offers a wide variety of products which meet the demands of the factory floor. They include a family of low cost, yet powerful, real-time, multi-tasking systems, as well as analog and digital I/O controllers. These products may be networked to provide real-time feedback on the process. In addition, there is a range of both Hewlett-Packard and third party application programs enabling the user to get the job done easily in the shortest time possible.

## Technical OEMs

Long ago, Hewlett-Packard recognized the importance of OEMs in marketing solutions to specialized segments of the marketplace. As such, Hewlett-Packard's technical computers are designed with the features necessary for customizing the products to meet the OEM's requirements. They are highly reliable, performance-oriented computer "engines" with the flexibility in power and packaging and strong software offerings sought by the OEM. These computers offer a wide variety of interfaces for communication with other devices. OEMs like the convenience, support, and cost effectiveness of a single vendor solution with the commitment to retain the OEM investment in existing solutions when new products are developed.

Because of the design of Hewlett-Packard's technical computer products, a large portion of HP's OEMs come from engineering/science and factory and plant automation specialties. However, any OEM in need of flexible, reliable computer with a variety of interfaces will find HP's product line well suited to their demands.

**HP Computer Museum**  
**[www.hpmuseum.net](http://www.hpmuseum.net)**

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## Products

Our technical products have been designed to meet the requirements for the applications just mentioned. For individual tasks, the HP 9000 Series 200 family of desktop computers provides powerful 68000-based CPU performance with HP quality design at a highly competitive price. The smallest, the Model 216, easily fits on an office desk. The Model 216 is a "personal" computer, providing a technical and business problem-solving vehicle for technical professionals.

While it is a member of the same family, the HP 9000 Model 226 has additional capabilities. It is ideal for many applications in computer-aided test, such as on the assembly line or in the laboratory, because of its increased I/O and memory characteristics. The HP 9000 Model 220 is the modular box version of the Series 200. Its flexibility and ability to be placed in a test rack make it optimal for many computer-aided test situations.

The HP 9000 Model 236 is the top-of-the-line Series 200 computer, with a high resolution CRT in both monochrome and color versions. Its large screen particularly adapts it to engineering applications such as computer-aided design and analysis. The HP 9000 Series 200 systems, with the exception of the Model 216, are available in different operating environments. Choices include BASIC +, PASCAL or the new HP-UX.

Engineering and scientific tasks that require even more computing power are well suited to the HP 9000 Series 500. The HP 9000 Series 500 is the first single-chip, 32-bit CPU designed specifically as an engineering workstation. The products combine leading edge proprietary IC technology with advanced system design to achieve the lower system cost and high performance necessary for today's engineering and scientific workstations.

The HP 9000 Series 500 offers processing speeds of one million instructions per second (MIPS) in a package small enough to fit on your desk. Options exist to add up to three CPUs for maximum performance in both single-user and HP-UX (Unix\*-based) multi-user environments. I/O-intensive tasks are benefited by a dedicated I/O processor that can be augmented by optional additional I/O processors.

The HP 9000 Series 500 can be dedicated to a single user and tied together with other users through a 10 megabit per second local area network. In another configuration, the HP 9000 Series 500 can also be shared among a number of users through rack-mountable or cabinet-based systems. Thus, workstations with flexible or specific peripheral requirements have a variety of packaging options.

The HP 1000 computers are a family of compatible processors designed for high performance, real-time applications. The

features of the HP 1000 family have established its presence in factory and plant automation applications and have contributed to its popularity with OEMs. On the factory floor, the HP 1000 may be found either in direct control of a machine or as a supervisor monitoring and/or controlling a number of operations. OEM applications range from drafting systems to large turnkey control systems.

The HP 1000 processors are offered in a variety of configurations. These include board computers, box (rack mountable) computers, and both small and large systems. The A-Series, the latest addition to the product line, are the price-performance leaders of the HP 1000 family. The A-Series automation computers feature the A600 - a high performance (.4 IBM MIPS), low price micro-computer; the A700 - a highly customizable, high performance (.4 IBM MIPS) processor with optional hardware floating point and microprogramming features; and the A900 - the top-of-the-line price/performance (1.2 IBM MIPS) leader in the 16-bit computer field.

All of the A-Series processors use the identical real-time, multi-user, multi-tasking operating system - RTE-A. Features of RTE-A include fast response time for interrupts and a modern hierarchical file structure. Additionally, the compilers (including FORTRAN 77, Pascal, and BASIC) on the A-Series are identical across the product line. This cross compatibility preserves the investment in software should higher performance be required.

## Summary

The technical computer systems manufactured by HP range from the HP 1000 family of compatible processors designed for high performance, real-time applications, particularly in factory and plant automation; the HP 9000 Series 500 single-chip, 32-bit CPU specifically designed as an engineering workstation for engineering and scientific tasks; and the HP 9000 Series 200 high performance desktop computers used to solve technical and business problems. A wide variety of peripherals are available for each family of computers allowing maximum flexibility for the user in selecting the package which is best adapted to their particular application.

The sections that follow provide more detailed information on these products.

\*UNIX is a trademark of Bell Laboratories, Inc.