

## DEC PDP-11 Family

### Product Enhancement

DEC has enhanced the PDP-11 Family by introducing the Micro/PDP-11/73 and new software: F77/RT-11 and a new version of the Ultrix-11 operating system.

#### Micro/PDP-11/73

The Micro/PDP-11/73 is a high-end addition to the Micro/PDP-11 grouping within the PDP-11 Family, joining the Micro/PDP-11/23 (formerly known simply as the Micro/PDP-11). Targeted toward both technical and commercial end users and OEMs, the Micro/PDP-11/73 can address a range of applications, including engineering, manufacturing, office automation, communications, medical, education, small business, and laboratory.

According to DEC, the new system provides raw CPU power three to five times greater than that of the Micro/PDP-11/23 and equivalent to that of the high-end PDP-11/44, a midrange minicomputer. A fully configured Micro/PDP-11/73 system reportedly delivers 75 percent of the performance provided by a fully configured PDP-11/44.

The Micro/PDP-11/73 CPU incorporates DEC's new 15M-Hz CMOS VLSI J-11 microprocessor chip set, which provides a full PDP-11 instruction set, including EIS, floating point instructions, 8KB of direct-mapped cache memory, a Memory Management Unit (MMU), and console terminal microcode. The CPU module also includes a 32KB bootstrap/diagnostic ROM, a 2KB EEROM, a console serial line unit, and a program-controlled line clock. The system supports from 256KB to 4MB of main memory (based on 64K-bit MOS chips); memory provides 18- or 22-bit addressing.

The Micro/PDP-11/73 can run 10 DEC operating systems: MicroRSX; RSX-11S, -11M, and -11M-Plus; Micro/RSTS and RSTS/E; RT-11; CTS-300; DSM-11; and Ultrix-11 (formerly called V7M11), DEC's 16-bit implementation of AT&T's Unix operating system. According to DEC, that versatility makes the Micro/PDP-11/73 software-compatible with the rest of the PDP-11 family; depending on configuration requirements and media, most PDP-11 application software available for those operating systems will run on the Micro/PDP-11/73 without being rewritten. The system also supports the following data communications protocols: IBM 2780/3780 and 3271; X.25; DEC SNA Gateway; DECnet; and Ethernet.

The Micro/PDP-11/73 supports Q-Bus peripheral products, including disks, tapes, and data communications interfaces. Among newer peripherals, the Micro/PDP-11/73 supports the 31MB RD52 Winchester disk subsystem; the TK25, a 55 ips, 60MB, 8-inch cartridge streaming tape subsystem; and the RQC25, a 52MB fixed/removable disk subsystem combining a 26MB Winchester fixed disk and a 26MB sealed removable cartridge. (The RQC25 is a Q-Bus version of the Unibus RC25 drive previously available only with the VAX-11/725; although available separately, it is included only in those Micro/PDP-11/73 system packages aimed at OEMs). The Micro/PDP-11/73 can support up to 104MB of online disk storage. Up to 14 terminals can be attached, with 4 to 12 stations concurrently active.

The Micro/PDP-11/73 is available in both rackmount and standalone versions; according to DEC, the system can fit on top of or under a desk, and can operate in a normal business environment without special power or air conditioning requirements. The CPU with 512KB of main memory is priced at \$7,800. A basic configuration comprising a CPU, 512KB of main memory, an RX50 819.2KB dual diskette drive, an RQDX1 disk controller, an RD52 31MB Winchester disk subsystem, and a DHV11 8-line asynchronous multiplexer is priced at \$15,140. A configuration in which a tape controller and a TK25 cartridge tape drive are substituted for the RX50 diskette costs \$19,040. (The RD52 and RQC25 disk subsystems are available for \$3,000 and \$12,500, respectively; the TK25 streaming tape subsystem is available for \$4,600.) The Micro/PDP-11/73 is scheduled for delivery in the third quarter of 1984. Quantity discounts are available; delivery is within 60 days after receipt of order (ARO).

The Micro/PDP-11/73 is a significant addition to the PDP-11 family; it provides heightened power at the lower end of the family while retaining software compatibility across the line. In addition, the system's added power comes at a lower price; according to DEC, the Micro/PDP-11/73 provides lower per-terminal cost than other PDP-11 systems. The manufacturer has stated that a 12-user system employing DEC's VT220 terminals has a per-terminal cost under \$2,400.

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Because of its intrinsic power and breadth of applications, the Micro/PDP-11/73 can compete against a range of systems, including 16-bit supermicros such as Altos' 986-40 and Convergent Technologies' NGEN, 16-/32-bit Motorola 68000-based supermicros like the NCR I-Tower, and 16-bit minicomputers, including the Wang VS15 and VS25, the Data General Eclipse C/30 and S/20, and the Hewlett-Packard HP 250/30, /40, and /50.

#### Software

F77/RT-11, a new implementation of PDP-11 Fortran 77, runs under the RT-11 operating system, employing the same compiler as the Fortran 77 that runs under the RSX and RSTS operating systems. F77/RT-11 features complete support of double-precision and complex arithmetic, virtual arrays, encode/decode statements, formatted and unformatted sequential and direct access input/output, dynamic runtime FORMAT capability, byte data type, and free-format I/O. The new compiler runs under version 5 or 5.1 of RT-11 on any PDP-11 configuration with at least 48KB of user memory, 1MB of available disk space, and a floating-point processor (FPP). According to DEC, F77/RT-11 is compatible with VAX Fortran, permitting Fortran source programs to be ported from the PDP-11 Family up through the VAX-11 Systems family. F77/RT-11 is available through DEC's External Applications Software (EAS) Library and is priced from \$950; it is available 30 days ARO.

The Ultrix-11 operating system has been enhanced in Version 2.0 to provide hardware support for the Micro/PDP-11/73, as well as for other PDP-11 Family computer systems. Ultrix-11 Version 2.0 is priced from \$800 for a 16-user license on Micro/PDP-11 systems; it is scheduled for availability in the Fall of 1984. □