PDP-11
PDP-11/03

The PDP-11/03 is a complete and powerful mini-computer on four integrated circuit chips. These large-scale-integrated circuits are mounted on a single 8½ by 10½ inch printed circuit board contained within a rack mountable 3½ x 19 x 13½ inch assembly. These chips provide over 400 instructions in an addressing and I/O structure usually found only in much larger and more costly computers. Such features as hardware stack processing, eight general purpose registers, vectored interrupts and single and double operand addressing are standard.

FEATURES:
- Small size (four LSI chips) in a convenient package
- Powerful instruction set
  over 400 instructions
  single and double operand addressing
  16-bit word and 8-bit byte processing
  eight general purpose registers
  hardware stack processing
- Powerful I/O structure
  vectored interrupts
  priority structured I/O
  LSI bus, a subset of the UNIBUS
  Direct memory access for high speed peripherals
  asynchronous handling of peripherals
- Choice of solid-state or core memory
- Power-fail/auto-restart
- Real-time clock input

DESCRIPTION
Powerful Instruction Set
More than 400 instructions make up the extensive instruction set. This instruction set (also used by the PDP-11/35,40) permits the user to take advantage of standard PDP-11 software. The only departure from the standard software is the addition of two new instructions, used to explicitly access the processor status word. Development programs, as in the rest of PDP-11 family, include assemblers, linkers, editors, loaders, utility packages, operating systems, and higher level languages.

Extensive Computer Power and Small Processor Size
The processor module is built around a set of four N-channel metal oxide semiconductor (MOS) chips, which include control and data elements as well as two micro-coded read-only memories (microms). The latter are programmed to emulate the powerful PDP-11/34 instruction set, along with routines for on-line debugging techniques (ODT), operator interfacing, and boot-strap loader capability. The processor also contains a 16-bit buffered parallel input/output (I/O) bus, a 4096-word MOS random-access memory (RAM), a real-time clock input, priority interrupt control logic, power-fail/auto restart, and other features to provide stand-alone operation. The entire processor, plus all of the above-mentioned features, are contained on one 8.5-by-10-inch printed circuit board.

Modularity

The processor, memory, device interfaces, backplane, and interconnecting hardware are all modular in design. Module selection, such as the type and size of memory, and device interfaces, enable custom tailoring to meet specific application requirements. The asynchronous, bidirectional LSI-bus structures permit easy expansion of peripherals. In addition, interfaces are less complex, less costly, because addresses and data are multiplexed on the common bus.

Choice of Memory

Memory modules are offered for applications requiring more storage than is available with the 4096-word MOS random-access memory on the processor board. Included are a nonvolatile 4096-word memory, a 4096-word dynamic RAM which can be automatically refreshed either by central processor microcode, or an external refresh circuit, and read-only memory (PROM/ROM) with capacity to a maximum of 4096 words in 512-word increments (2048 words in 256-word increments).

Power-Fail/Auto Restart

Whenever DC power sequencing signals indicate an impending AC power loss, a microcoded power-fail sequence is initiated. When power is restored, the processor can automatically return to the run state. Four options are available for power up sequencing.

Addressing

Much of the power of the processor is derived from its wide range of addressing capabilities. Processor addressing modes include sequential forward or backward addressing, address indexing, indirect addressing, 16-bit word addressing, 8-bit byte addressing, and stack addressing. Variable-length instruction formatting allows a minimum number of words to be used for each addressing mode. The result is efficient use of program storage space.

Peripherals

A full line of peripherals are being added to meet a wide variety of needs. These include the LA36 DECwriter terminal, the LA180 DECprinter, the RX11 floppy disk, and communications interfaces.

Software

Software includes RT-11 real-time disk operating system, multi-user BASIC, single user BASIC, and FORTRAN.