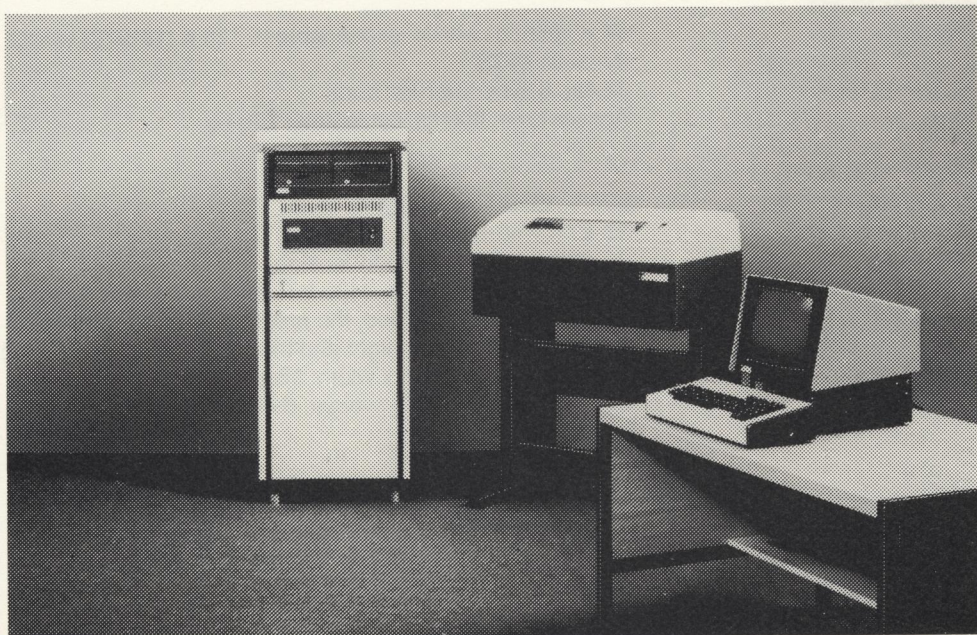




# RC 8000-15

## Processing Unit

- 24-BIT WORD LENGTH
- LSI TECHNOLOGY
- MICROPROGRAMMED
- SEMICONDUCTOR MEMORY WITH ERROR CORRECTION
- MICROCODED SELF-DIAGNOSTICS
- FLOATING-POINT ARITHMETIC



The outline of an RC8000-15 processing system



## GENERAL

The RC8000-15 processing unit is a general-purpose processor. The word length is 24 bits. The 4-accumulator, microprogrammed processor is based on LSI technology. As a result the processor is very compact yet powerful.

The main memory is implemented with 16 K dynamic MOS memory chips. Each storage word consists of 24 data bits and a 6-bit error correction code. The ECC hardware automatically corrects all single-bit errors and detects double-bit and some multiple-bit errors. The RC8000-15 processing systems offer main memory size of 64 K words which can be expanded to 128 K words.

Extensive microcode resident self-diagnostics of CPU and main memory are standard features, activated automatically at autoloading. The diagnostics can also be operated from the technician console during servicing of the equipment.

The processor has a 24-bit single address instruction format with 64 basic instructions. All instructions can work on all 4 accumulators. They have a 12-bit address displacement and 16 addressing modes including relative, indexed, and indirect addressing. 12-bit halfwords are directly addressable.

Integer arithmetic uses 24-bit words and 12-bit half-words, floating-point and extended range integer arithmetic use 48-bit double-words. Data manipulation is aided by half-word operations and word comparison functions. Logical operations permit setting and testing of single bits. Program protection is obtained by means of limit registers and privileged instructions executable only in monitor mode. Dynamic program relocation is possible through use of modified base register technique. An escape facility can be used to cause programmed action on preselected events.

Typical instruction execution times of the RC8000-15 processing unit are 3-10  $\mu$ sec. The combination of the powerful interrupt system, the program protection system, and the real-time feature makes the RC8000-15 well-suited to perform multiprogramming applying virtual techniques.

Data transfers to and from the peripherals are controlled by channel programs stored in the main memory. The peripherals are connected by means of dedicated or general-purpose controllers. The system includes one general-purpose controller and supports one dedicated controller.

## SPECIFICATIONS

### PROCESSING UNIT

Control store:	2 K words, 36-bit each, PROM
CPU cycle time:	200 ns
Instr. exec. time:	3-10 $\mu$ s typically, 46 $\mu$ s max.
Interrupt system:	8 internal, 8 external levels; response time: 10 $\mu$ sec. approx.
Real-time clock:	0.1 ms resolution, stability: 4s/24 h
Standard features:	Autoload via disc channel or device controller. Interrupt generating 25.6 ms interval timer. Microcoded self-diagnostics.
Optional feature:	Technician console adapter. (RC101).

### MAIN MEMORY

Capacity:	64 K (65536) words, expandable to 128 K (131072) words, dynamic MOS
Word length:	24-bit, 6-bit correction code
Speed:	Access time: 600 ns, cycle time: 700 ns

### ENVIRONMENTAL

Power requirements:	220 V AC, 50 Hz, 750 W
Temperature, amb.:	10-27°C (50-80°F)
Humidity:	20-80% relative, non-condensing
Heat dissipation:	2700 kJ/h (650 kcal/h, 2400 BTU/h)
Mounting:	19-inch cabinet included, the processing unit occupies 48.7 cm (19.2 in.) in height and the weight is 55 kg (121 lb.)
Cabinet, min:	Height: 143 cm (56 in.), width: 58 cm (22.8 in.), depth: 80 cm (31.5 in.), weight: 69 kg (152 lb.)