

X6818.20135

GML Minicomputer Review

THE COMPUTER HISTORY MUSEUM



1 027 8543 3

# MINICOMPUTER REVIEW

**GML**



**MINICOMPUTER REVIEW**

**1974**



**GML**



## MINICOMPUTER REVIEW

A guide for decision makers in all industries who need analytical as well as technical information about mini-computers and the companies that manufacture them.

SEND NO MONEY NOW . . .  
MINICOMPUTER REVIEW  
will invoice you later

\$38/year (3 issues). Foreign postage  
\$4. 15% quantity discount for ten or  
more subscriptions to one address.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_ DEPT. \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NUMBER OF SUBSCRIPTIONS THIS ORDER. \_\_\_\_\_



**Information Services  
For Professionals.**

**FIRST CLASS  
PERMIT NO. 43765  
BOSTON, MASS. 02109**

**BUSINESS REPLY MAIL**

**NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES**

**POSTAGE WILL BE PAID BY**

**GML CORPORATION  
594 Marrett Road  
Lexington, Massachusetts 02173**



**GML**



## PERIPHERALS REVIEW

A guide for decision makers in all industries who need analytical as well as technical and price information about peripherals from independent manufacturers.

SEND NO MONEY NOW . . .  
PERIPHERALS REVIEW  
will invoice you later.

\$39/year (3 issues).

Foreign postage \$4.

20% quantity discount for 10 or  
more subscriptions to one address.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_ DEPT. \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NUMBER OF SUBSCRIPTIONS THIS ORDER. \_\_\_\_\_



**Information Services  
For Professionals.**

**FIRST CLASS  
PERMIT NO. 43765  
BOSTON, MASS. 02109**

---

---

---

---

---

---

---

---

---

---

**BUSINESS REPLY MAIL**

**NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES**

**POSTAGE WILL BE PAID BY**

**GML CORPORATION  
594 Marrett Road  
Lexington, Massachusetts 02173**



# COMPUTER REVIEW

A guide for executives in all industries who need analytical, as well as technical information about equipment on the data processing market today.

SEND NO MONEY NOW . . .  
COMPUTER REVIEW  
will invoice you later

\$35/year (3 issues). Foreign postage \$4. 20% quantity discount for ten or more subscriptions to one address.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_ DEPT. \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NUMBER OF SUBSCRIPTIONS THIS ORDER. \_\_\_\_\_



**Information Services  
For Professionals.**

**FIRST CLASS  
PERMIT NO. 43765  
BOSTON, MASS. 02109**

---

---

---

---

---

---

---

---

---

---

**BUSINESS REPLY MAIL**

**NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES**

**POSTAGE WILL BE PAID BY**

**GML CORPORATION  
594 Marrett Road  
Lexington, Massachusetts 02173**

**GML**



## TERMINALS REVIEW

A guide for decision makers in all industries who need analytical as well as technical information about terminals on the market today.

SEND NO MONEY NOW . . .  
TERMINALS REVIEW  
will invoice you later

\$28/year (4 issues). Foreign postage  
\$4. 20% quantity discount for ten or  
more subscriptions to one address.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_ DEPT. \_\_\_\_\_

STREET \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NUMBER OF SUBSCRIPTIONS THIS ORDER. \_\_\_\_\_



**Information Services  
For Professionals.**

FIRST CLASS  
PERMIT NO. 43765  
BOSTON, MASS. 02109

---

---

---

---

---

---

---

---

---

---

**BUSINESS REPLY MAIL**

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

**GML CORPORATION  
594 Marrett Road  
Lexington, Massachusetts 02173**



# MINICOMPUTER REVIEW

**1974**

The MINICOMPUTER REVIEW, compiled and published by GML Corporation, is an annual guide to virtually all commercially available minicomputers in the world and to the companies that manufacture them. New equipment updates and price changes are issued twice a year at four month intervals and inserted alphabetically.

PUBLISHED AND COPYRIGHTED © 1973 BY

*GML Corporation*

594 MARRETT ROAD • LEXINGTON, MASSACHUSETTS • (617) 861-0515

<i>Publisher</i>	George M. Luhowy
<i>Editorial Board</i>	George M. Luhowy Edward N. Chase Robert D. MacCormack
<i>Editor</i>	Stephen A. Pettibone
<i>Associate Editors</i>	Michael O. Hopper Benjamin C. Kwok
<i>Circulation Manager</i>	Carl Turley
<i>Subscriptions</i>	Susan Snell Soloman

*How to subscribe to MINICOMPUTER REVIEW*

Annual subscriptions to the MINICOMPUTER REVIEW are \$38.00 and \$4.00 foreign postage. All prices are in U.S. funds and international money orders are accepted. A 15% quantity discount applies to ten or more subscriptions mailed to the same address. Special discounts on quantities over 50 quoted on request. Orders should be mailed to GML Corporation, 594 Marrett Road, Lexington, Massachusetts 02173.

Telephone orders processed same day.

Simply call (617) 861-0515

Copyright © 1973 by GML Corporation, the publisher. All rights reserved. No part of this book may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording or by an information storage or retrieval system, without prior permission in writing from the publisher.

Printed in the United States of America

## *About Minicomputer Review*

A guide for professionals in business and industry who require analytical as well as technical information about minicomputers and the companies that make them. This first issue of MINICOMPUTER REVIEW contains information on 140 minicomputers and the 49 manufacturers worldwide that make them.

The MINICOMPUTER REVIEW is in three sections.

*Section I* is an overview of the minicomputer market, and provides a profile of market trends, general minicomputer hardware/software characteristics, and typical systems configurations.

*Section II* contains descriptions of minicomputer models and company profiles of each manufacturer, arranged alphabetically.

*Section III* provides a price listing of minicomputer systems.

In future issues, this column will contain capsule descriptions of new minicomputers, and notes on new developments and revisions.

We take this opportunity to express our thanks to Mr. Robert D. MacCormack whose assistance in all fields of minicomputer technology was invaluable.

We also thank Mr. Michael O. Hopper for his excellent advice on minicomputer communications and software.

Ed.

## CONTENTS

### Section I

#### **MINICOMPUTER PROFILE**

Market Trends

Introduction to Minicomputers

### Section II

#### **COMPANIES AND COMPUTERS**

Explanation of Headings

Company Index

Company Profiles

Minicomputers in Review

### Section III

#### **PRICES**

System Prices

## HOW TO USE MINICOMPUTER REVIEW

The availability of the items listed under FEATURES and SOFTWARE is denoted by an asterisk (\*) preceding the item. Only those items preceded by an asterisk are available for the particular minicomputer model being described.

The meaning of the symbols used to denote Instructions, Communications, and CPU Features are listed under the appropriate headings at the bottom of each page which describes minicomputer models.

Standard and optional hardware features are divided by a slash (/). The features preceding the slash are standard, those following the slash are optional.

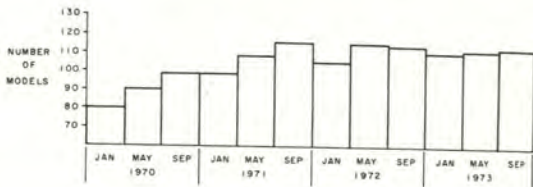
**MINICOMPUTER PROFILE**

## MANAGEMENT SUMMARY

There are many small, inexpensive computers on the world market today and their capabilities vary with function and design. Many have processing power and software complexity comparable to larger and more expensive systems. Minicomputers find applications in all areas of business, government and education and their use spans all disciplines.

There are over 50 manufacturers of minicomputers in the world who market over 140 minicomputer models. Of these 50 manufacturers, over 35 are United States Companies who market over 100 minicomputer models. Growth of the market for the past four years is graphed below.

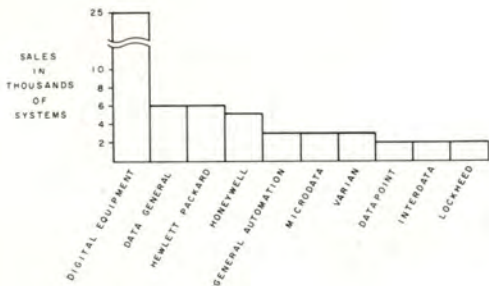
TOTAL NUMBER OF MINICOMPUTER MODELS COMMERCIALY AVAILABLE IN THE U.S.



Among the 35 current U.S. manufacturers, the top ten companies (by number of minicomputer systems sold) are shown in the chart below.

### TOP TEN MANUFACTURERS OF MINICOMPUTERS BASED ON SYSTEMS SOLD

(INDICATING SALES IN EXCESS  
OF FIGURES SHOWN)



## GENERAL GUIDELINES TO MINICOMPUTER SYSTEMS

Typical ranges for minicomputer specifications are:

### HARDWARE

- Cost:** \$5,000 to \$50,000.
- Size:** Approximately three cubic feet. May fit on a desk top or be generally mounted in a 19" rack.
- Requirements:** No special air conditioning or power requirements. Can be plugged directly into standard outlets.

#### Processor Specifications:

- Word Size:** 8-16 binary digits (bits)
- Capacity:** 4-32K words (K=1024)
- Cycle Time:** 0.7-1.5 microseconds
- Instructions:** character manipulation, decimal arithmetic, floating point, or multiply-divide instructions may be included.
- Transfer Rate:** 0.5-2.0 million characters per second.

### SOFTWARE

Essential programs for minicomputer users are Diagnostics, Binary Loaders, Debugging and Utility routines, and Editors. The minimum program language is an Assembler or a Macro Assembler. Assemblers, higher level languages, and operating systems are briefly described below. The typical hardware required to support the software is given.

#### PROGRAMMING LANGUAGES

- Assembler** Allows programming of the machine instruction set using mnemonic symbols.  
*Computer with 2K to 4K memory and teletypewriter are required.*
- Macro Assembler** Generates user-defined mnemonic codes for operations on multiple operands; provides a medium between assembly language programming and higher level language programming.  
*Computer with 4K to 8K memory and teletypewriter are required.*

**FORTRAN** The most widely known and used programming language for small computers; scientifically oriented but useful for business programming as well.

*Computer with 4K to 12K memory and teletypewriter are generally required. For most higher-level languages a stand alone compiler is available, but more commonly the compiler is part of an operating system and requires the hardware of the operating system.*

**BASIC** Simple, easy-to-use, English-like programming language, often found in a multi-user environment.

*Computer with 4K to 12K and teletypewriter, or multiple terminals.*

**COBOL** Business-oriented programming language, not widely supported on small computers.

*Computer with 8K to 16K memory and teletypewriter are the usual requirements.*

**RPG** Programming system for generating reports in pre-specified formats.

*Computer with 4K to 8K memory, teletypewriter, line printer and card reader are commonly required.*

**PLI** A powerful scientific and business applications language which combines ease of higher-level language programming with the control of computer operations generally associated with assembly languages.

*Computer with 8K to 16K memory and teletypewriter are required.*

**ALGOL** A powerful scientific application language widely used in Europe.

*Computer with 8K to 12K memory and teletypewriter are required.*

**APT** The most widely used machine tooling language in industrial automation applications.

*Computer with 8K to 16K memory and teletypewriter are required.*

## OPERATING SYSTEMS

- Simple Executive Monitor** A monitor for simple program interrupt and input/output control.  
*Computer with 4K to 12K memory, teletypewriter, and mass storage are required.*
- Real-Time Monitor** A monitor for real-time interrupt and programming operations; may be combined with simple or batch monitor for "foreground-background" processing of multiple tasks.  
*Computer with 8K and 24K memory, teletypewriter, and mass storage are required.*
- Batch Monitor** An executive for sequential job operations or "job streams."  
*Computer with 8K to 16K memory, teletypewriter, and input/output devices such as card readers and printers are required.*
- Time Sharing Monitor** An executive which provides control for the concurrent use of the CPU by a number of users at remote terminals.  
*Computer with 12K to 24K memory, mass storage, remote terminals, and output devices such as a printer are required.*

## PERIPHERAL DEVICES

The basic input/output device for a minicomputer is a teletypewriter with integral paper tape reader and punch, or a similar keyboard terminal.

A variety of low-cost miniperipherals are available from both computer manufacturers and independent vendors. Typical among these are magnetic tape cassettes, floppy disk units, and serial printers.

Conventional peripherals such as magnetic tape drives, disc storage and card reader/punches are commonly available.

Interfaces are available for a number of applications: multiline asynchronous or bisynchronous interface for communications processing; Analog-Digital, Digital-Analog multiplexors for process control; and selector channel interfaces for computer-to-computer communication in front-end, message switching, or remote batch terminal applications.

## TYPICAL SYSTEMS CONFIGURATIONS

A *small minicomputer system* consists of a computer with 4K to 8K memory, teletypewriter, paper tape software which includes an Assembler, Editor, and Utility routines.

A *medium minicomputer system* consists of a computer with 8K to 16K memory, teletypewriter, and mass storage such as magnetic tape or disk. Software includes a FORTRAN or BASIC compiler and an appropriate monitor for the particular applications.

A *large system* consists of a computer with minimum 16K memory, disk and magnetic tape storage, terminals and input-output devices required by the application. Systems programming is executed in a higher level language.

## SPECIFIC APPLICATION CONFIGURATIONS

**Process Control:** Computer with 4K or more memory, teletypewriter, and A-D or D-A converter.

**Communications:** Computer with 8K or more memory, mass storage, and asynchronous line multiplexor for 16 or more lines.

**Remote Batch Terminal:** Computer with 8K or more memory, disk storage, card reader and line printer, and computer-to-computer communications interface.

---

**COMPANIES & COMPUTERS**

## DESCRIPTION OF MINICOMPUTERS

A description of each company and the minicomputers manufactured by that company appear on the following pages in alphabetical order.

The first page is a company profile which includes address, telephone number, background information, financial data, and summaries of available products.

Following the Company Profile, a full page is devoted to a description of each of the company's minicomputer models.

## GENERAL DESCRIPTION

A brief summary of the computer includes application area, date of introduction and cost of a minimum system with teletype controller.

## FEATURES

The terms used to describe outstanding features of each minicomputer are:

- |                                 |   |
|---------------------------------|---|
| <b>Upward Compatible</b>        | The availability of program-compatible computers from the same manufacturer larger or more powerful than the model described.                     |
| <b>Field Service</b>            | the availability of field maintenance.  |
| <b>Application Software</b>     | The availability of standard software packages for specific applications.   |
| <b>Conversational Languages</b> | The availability of languages which allow conversational interaction between the user and computer.   |
| <b>Communications Processor</b> | The availability of standard 16-line (or more) communications multiplexor interfaces from the manufacturer.                                       |
| <b>Microprogrammable</b>        | The availability of standard hardware, which allows the user to alter the instruction set by programming the elementary (micro) machine commands. |
| <b>Virtual Memory</b>           | The availability of hardware and software which allows automatic control of address specifications beyond the actual core storage capacity.       |

- Multiprocessor** The availability of hardware which allows two or more processors to share common memory modules.
- Process Control** Availability of standard analog-to-digital, or digital-to-analog converter line interfaces.
- Time Sharing** Availability of software other than multi-user interpretive languages, which allows concurrent use of the computer's facilities from multiple terminals.

## HARDWARE

The terms used to describe hardware features of each minicomputer are:

- Word Size** The number of binary digits (bits) which comprise the basic memory unit.
- Capacity** The minimum and maximum memory capacity in words.
- Cycle Time** The time to read (and restore) a single word in memory.
- Add Time** The minimum execution time for a binary add instruction excluding register-to-register operations.
- Instructions** The availability as standard or optional of the following hardware instructions:
- Indirect addressing* Specifies a memory location which contains the address of the operand location.
- Byte manipulation* Processing of characters where the number of bits per character is generally less than word size.
- Decimal* Decimal arithmetic instructions.
- Extended Precision* Arithmetic operations on operand two or more word sizes in length.
- Floating point* Arithmetic operation on operands with variable (floating) binary point.
- Multiply-Divide* Hardware instruction for multiplication and division of operands.
- Stack Processing* Instructions which use hardware registers for list or arithmetic processing on a first in-last out basis.

- Accumulators** The number of hardware registers available for arithmetic operations.
- Index Registers** The number of registers available for address modification.
- Communications** The availability as standard or optional of:
- Asynchronous* Interfaces for asynchronous line transmission.
  - Bisynchronous* Interfaces for binary synchronous line transmission.
  - Direct memory access* The transfer into and out of the computer memory, bypassing the processor.
  - Multipoint memory* Memory modules with multiple access for switching among input-output lines or processors.
  - Selectable line speeds* Interfaces for asynchronous or synchronous transmission at rates which are jumper, switch, or program-selectable.
  - Autodial* Interfaces which allow automatic operation of terminals under computer activated control.
- Transfer Rate** The maximum transfer rate of data to the computer, in characters per second.
- CPU Features** The availability as standard or optional of the following processor features:
- Base Address Relocation* The ability to relocate programs in memory through use of a base address register.
  - Real-Time Clock* A hardware register which increments at a fixed rate.
  - Dynamic Page Relocation* The automatic control of address specifications for mapping of program segments into variable areas of memory.
  - Power Fail Safe* Hardware or software which provides automatic restart of programs following a power failure.
  - Interrupt* The automatic initiation of a new control sequence following an internal or external signal to the processor.
  - Memory Protection* The ability to restrict, under program control, use of portions of memory by programs or data transfers.
  - Memory Parity* The presence of an additional bit on each memory word which detects errors by indicating parity (an odd or even number of ones in the word.)

**Peripherals**

The availability from the minicomputer manufacturer (as standard product offerings) of the following:

Removable disks (*with range of capabilities*)

Fixed Head disks (*with range of capacities*)

Magnetic tape (*with range of tape speed and transfer rates*)

Paper tape reader or punch

Card reader or punch

Line printer (*with range of printing speeds*)

Serial printers (*with range of printing speeds*)

Display terminals

Multiplexor (*with type: asynchronous, synchronous, or A-D converter lines*)

**SOFTWARE**

The following compilers, interpreters, and operating systems are used to describe the software features of each minicomputer. The core memory requirement for the particular software system is given.

Assembler

Macro Assembler

FORTRAN

BASIC — single user

BASIC — multi user

COBOL

RPG

PLI

ALGOL

APT

Disk Monitor

Real-Time Monitor

Time-Sharing Monitor

Batch Monitor

Other operating system

## COMPANY INDEX

The following companies appear in the 1974 issue of MINICOMPUTER REVIEW.

BENDIX	HEWLETT-PACKARD
BUSINESS COMPUTERS	HITACHI
CII	HOKUSHIN
CINCINNATI MILACRON	HONEYWELL
COMPUTER AUTOMATION	IBM
CONTROL DATA	INTEL
DATA GENERAL	INTERDATA
DATA CRAFT	LABEN
DATA POINT	LINOLEX
DIGITAL COMPUTER CONTROLS	LOCKHEED
DIGITAL EQUIPMENT	MATSUSHITA
DIGITAL SCIENTIFIC	MICRODATA
ELECTRONIC PROCESSORS	MITSUBISHI
ELECTRONICS ASSOCIATES	MODULAR
FOUR-PHASE	NIPPON
FUJITSU	NORSK
GENERAL AUTOMATION	OMNUS
GRI	PHILIPS
GTE	PRIME

COMPANY INDEX

QUANTEL

RAYTHEON

ROLM

SIEMENS

SYSTEMS

TELEMECANIQUE

TEXAS INSTRUMENTS

TOSHIBA

VARIAN DATA

WESTINGHOUSE

XEROX

# MINICOMPUTER REVIEW

BENDIX 1

## COMPANY PROFILE

BENDIX CORPORATION  
Navigation and Control Division  
Teterboro, New Jersey 07608 USA  
(201) 288-2000

Bendix manufactures and markets worldwide electronic, aerospace and industrial products, as well as computers designed primarily for specialized navigation and control applications.

Established: 1970

Revenue: N/A

Net Earnings (loss): N/A

Offices: Worldwide

Sales: N/A

PRODUCTS available include the Bendix BDX-6200 and BDX-9000 computers, and a Fast Fourier Transform module. Emphasis is on complete control systems for specialized applications.

SOFTWARE support includes an Assembler, a simulator, and a math library.

## BENDIX BDX-6200

A general-purpose computer for process control systems. Introduced in 1970, cost depends on the system application.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	*Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 20 bits	Removable Disk: ?
Capacity: 4-16K core	Fixed Head Disk: ?
Cycle Time: 2.0 usec	Mag Tape: yes
Add Time: 4.0 usec	
Instructions <sup>1</sup> : AEM	Tape Cassettes: no
Accumulators: 3	Paper Tape RD, PN: yes, no
Index Registers: 3	Card RD, PN: yes, no
Communications <sup>2</sup> : /D	Line Printer: ?
Transfer Rate: 3.0 mc	Serial Printer: yes
CPU Features <sup>3</sup> : I/CFMP	Display Terminal: ?
Interface Slots: ?	Multiplexor: A-D

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

BENDIX 3

## BENDIX BDX-9000

A general-purpose computer for navigation and process control applications. Introduced in 1972, cost of a 4K system is \$5,500.

### FEATURES

Upward compatible  
\* Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32 core  
Cycle Time: 1.0 usec  
Add Time: 2.0 usec  
Instructions<sup>1</sup>: AM  
Accumulators: 16  
Index Registers: 2  
Communications<sup>2</sup>: /D  
Transfer Rate: 1.0 mc  
CPU Features<sup>3</sup>: I/CFMP  
Interface Slots: ?

Removable Disk: ?  
Fixed Head Disk: ?  
Mag Tape: ?  
Tape Cassettes: ?  
Paper Tape RD, PN: ?  
Card RD, PN: ?  
Line Printer: ?  
Serial Printer: ?  
Display Terminal: ?  
Multiplexor: ?

### SOFTWARE

\* Assembler 4K  
Assembler, Macro  
FORTRAN  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

BUSINESS COMP 1

## COMPANY PROFILE

BUSINESS COMPUTERS LIMITED  
7-11 Longmoore Street  
London SW1V 1JH  
01-828-0865

Business Computers manufactures and markets a small real-time data processing system which employs disks, displays, and data entry terminals.

Established: ?

Revenue: ?

Net Earnings (loss): ?

Offices: ?

Sales: Over 200 computer systems

PRODUCTS available include the Molecular 18 Computer, plus the following peripheral devices: disks, magnetic tape, line and serial printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an RPG compiler; and real-time, batch, and time sharing monitors.

## BUSINESS COMPUTERS MOLECULAR 18

A general-purpose computer for business data processing. Introduced in 1971, cost of a 4K system is \$5,500.

## FEATURES

Upward compatible  
 \* Field Service  
 \* Applications Software  
 Conversational Languages  
 Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 Process Control  
 \* Time Sharing

## HARDWARE

Word size: 18 bits  
 Capacity: 4-32K core  
 Cycle Time: 1.2 usec  
 Add Time: 2.0 usec  
 Instructions<sup>1</sup>: ABD  
 Accumulators: 2  
 Index Registers: 1  
 Communications<sup>2</sup>: D/A  
 Transfer Rate: 3.6 mc  
 CPU Features<sup>3</sup>: ?  
 Interface Slots: ?

Removable Disk: 2.5-10 mc  
 Fixed Head Disk: yes  
 MagTape: yes

Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 135-600 lpm  
 Serial Printer: 15-75 cps  
 Display Terminal: yes  
 Multiplexor: asyn, syn

## SOFTWARE

Assembler  
 Assembler, Macro  
 FORTRAN  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 \* RPG ?K  
 PL1

ALGOL  
 APT

Disc Monitor  
 \* Real Time Monitor ?K  
 \* Time Sharing Monitor ?K  
 \* Batch Monitor ?K  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

CII 1

## COMPANY PROFILE

COMPAGNIE INTERNATIONALE POUR L'INFORMATIQUE  
68 Route de Versailles  
78 Louveciennes France  
(951) 86-00

CII manufactures and markets a variety of large scale computers worldwide, as well as minicomputers designed for communications and control.

Established: 1966  
Revenues: ?  
Net Earnings (loss): ?  
Offices: Worldwide  
Sales: Over 250 MITRA computer systems

PRODUCTS available include the 15/20 and 15/30 computers, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, a Macro Assembler, and FORTRAN compiler.

## CII MITRA 15/20

A general-purpose computer designed for communications and process control applications. Introduced in 1972, cost of a 4K system is \$13,000.

## FEATURES

* Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: yes
Capacity: 4-32K core	Fixed Head Disk: yes
Cycle Time: .8 usec	Mag Tape: 20 kc (25 ips)
Add Time: 2.3 usec	
Instructions <sup>1</sup> : A/BEFM	Tape Cassettes: no
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 3	Card RD, PN: yes, yes
Communications <sup>2</sup> : M/AD	Line Printer: yes
Transfer Rate: 600 kc	Serial Printer: no
CPU Features <sup>3</sup> : BIMD/CF	Display Terminal: yes
Interface Slots: ?	Multiplexor: ?

## SOFTWARE

* Assembler 4K	ALGOL
* Assembler, Macro ?K	APT
FORTRAN ?K	
BASIC, single user	Disc Monitor
BASIC, multi-user	* Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

CII 3

## CII MITRA 15/30

A general-purpose computer designed for communications and process control. Introduced in 1972, cost of a 4K system is, \$17,000.

### FEATURES

Upward compatible  
\* Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
Process Control  
Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: .8 usec  
Add Time: 2.3 usec  
Instructions<sup>1</sup>: ABM/F  
Accumulators: 2  
Index Registers: 3  
Communications<sup>2</sup>: /AD  
Transfer Rate: 2.4 mc  
CPU Features<sup>3</sup>: BFIMP/C  
Interface Slots: ?

Removable Disk: yes  
Fixed Head Disk: yes  
MagTape: 20 kc (25 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: yes  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: ?

### SOFTWARE

\* Assembler 4K  
\* Assembler, Macro ?K  
\* FORTRAN ?K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT

Disc Monitor  
\* Real Time Monitor ?K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

CINCINNATI 1

## COMPANY PROFILE

CINCINNATI MILACRON INCORPORATED  
Process Controls Division  
Lebanon, Ohio 45036 USA  
(513) 494-1200

Cincinnati Milacron manufactures and markets a wide range of machine tools and process controls, as well as general-purpose, real-time computers used primarily in process control applications.

Established:	1884	
Revenues:	\$283 M	
Net Earnings (loss):	\$1.87 M	(12/72)
Offices:	U.S.	
Sales:	N/A	

PRODUCTS available include the CIP-2100 and 2200 computers, and the following peripheral devices: disks, line printers, card and paper tape equipment.

SOFTWARE support includes an Assembler, and RPG compiler; and a disk monitor.

## CINCINNATI MILACRON CIP-2100

A general-purpose computer used in a wide variety of process control applications. Introduced in 1970, cost of a 4K system is \$3,000.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| *Upward compatible       | Microprogrammable |
| *Field Service           | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | *Process Control  |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 8 bits                  | Removable Disk: yes         |
| Capacity: 4-32K core               | Fixed Head Disk: yes        |
| Cycle Time: 1.1 usec               | Mag Tape: no                |
| Add Time: 5 usec                   |                             |
| Instructions <sup>1</sup> : ABM    | Tape Cassettes: no          |
| Accumulators: 2                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 1                 | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : /D   | Line Printer: yes           |
| Transfer Rate: 900 kc              | Serial Printer: yes         |
| CPU Features <sup>3</sup> : I/CFMP | Display Terminal: ?         |
| Interface Slots: ?                 | Multiplexor: ?              |

## SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| *Assembler 4K      | ALGOL                |
| Assembler, Macro   | APT                  |
| FORTRAN            |                      |
| BASIC, single user | *Disc Monitor 16K    |
| BASIC, multi-user  | Real Time Monitor    |
| COBOL              | Time Sharing Monitor |
| *RPG 16K           | Batch Monitor        |
| PLI                | Other:               |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

CINCINNATI 3

CINCINNATI MILACRON CIP-2200

A general-purpose computer used in a wide variety of process control and business applications. Introduced in 1971, cost of an 8K system is \$3,500.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| Upward compatible        | Microprogrammable |
| * Field Service          | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | * Process Control |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 8 bits                  | Removable Disk: yes         |
| Capacity: 8-32K core               | Fixed Head Disk: yes        |
| Cycle Time: 1.1 usec               | Mag Tape: no                |
| Add Time: 5 usec                   |                             |
| Instructions <sup>1</sup> : ABDM   | Tape Cassettes: no          |
| Accumulators: 2                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 1                 | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : /D   | Line Printer: yes           |
| Transfer Rate: 900 kc              | Serial Printer: yes         |
| CPU Features <sup>3</sup> : I/CFMP | Display Terminal: ?         |
| Interface Slots: ?                 | Multiplexor: ?              |

## SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| * Assembler 4K     | ALGOL                |
| Assembler, Macro   | APT                  |
| FORTRAN            |                      |
| BASIC, single user | * Disc Monitor 16K   |
| BASIC, multi-user  | Real Time Monitor    |
| COBOL              | Time Sharing Monitor |
| * RPG 16K          | Batch Monitor        |
| PL1                | Other:               |

### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

COMPUTER AUTO 1

## COMPANY PROFILE

COMPUTER AUTOMATION  
18651 Von Karman Drive  
Irvine, California 92664 USA  
(714) 833-8830

Computer Automation manufactures a broad line of general purpose computers, primarily for OEM markets, and available in "bare-bones" minimum configuration.

Established: 1968  
Revenues: \$11.2 M  
Net Earnings (loss): \$1.0 M (6/73)  
Offices: Worldwide  
Sales: Over 1000 of the current  
line of computers

PRODUCTS available include the Alpha 16, Alpha 8, and Alpha LSI computers, and stripped-down versions, the NAKED ALPHA 16, 8, and LSI, plus the following peripheral devices: disks, magnetic tape, tape cassettes, line printers, card and paper tape equipment.

SOFTWARE support includes an Assembler, a conversational assembler, 1 to 8-user BASIC and FORTRAN compilers; disk, magnetic tape, and cassette monitors, plus real-time and communications monitors.

## COMPUTER AUTOMATION ALPHA 8

A general-purpose computer, also available in stripped version, primarily for OEM users. Introduced in 1971, cost of a 4K system is \$3,300 (\$1,975 for Naked Alpha 8).

## FEATURES

Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
* Conversational Languages	* Process Control
* Communications Processor	Time Sharing

## HARDWARE

Word size: 8 bits	Removable Disk: no
Capacity: 4-32K core	Fixed Head Disk: .064-1 mc
Cycle Time: 1.6 usec	Mag Tape: 10 kc (12.5 ips)
Add Time: 3.2 usec	30 kc (37.5 ips)
Instructions <sup>1</sup> : /F	Tape Cassettes: yes
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 0	Card RD, PN: yes, no
Communications <sup>2</sup> : D/AST	Line Printer: 100 lpm
Transfer Rate: 120 kc	Serial Printer: no
CPU Features <sup>3</sup> : BDI/CFMP	Display Terminal: no
Interface Slots: 4	Multiplexor: asyn, A-D

## SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

COMPUTER AUTO 3

## COMPUTER AUTOMATION ALPHA 16

A general-purpose computer, also available in stripped version, primarily for OEM users. Introduced in 1971, cost of a 4K system is \$4,050 (\$2,200 for Naked Alpha with 2K)

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | Multiprocessor    |
| * Conversational Languages | * Process Control |
| Communications Processor   | Time Sharing      |

### HARDWARE

- |                        |                             |
|------------------------|-----------------------------|
| Word size: 16 bits     | Removable Disk: no          |
| Capacity: 2-32K core   | Fixed Head Disk: .064-1 mc  |
| Cycle Time: 1.6 usec   | Mag Tape: 10 kc (12.5 ips)  |
| Add Time: 3.2 usec     | 30 kc (37.5 ips)            |
| Instructions: ABM      | Tape Cassettes: yes         |
| Accumulators: 1        | Paper Tape RD, PN: yes, yes |
| Index Registers: 1     | Card RD, PN: yes, no        |
| Communications: D/AST  | Line Printer: 100 lpm       |
| Transfer Rate: 1.4 mc  | Serial Printer: no          |
| CPU Features: BDI/CFMP | Display Terminal: no        |
| Interface Slots: 3/10  | Multiplexor: asyn, A-D      |

### SOFTWARE

- |                         |                            |
|-------------------------|----------------------------|
| * Assembler 4K, 8K      | ALGOL                      |
| Assembler, Macro        | APT                        |
| * FORTRAN 4K            |                            |
| * BASIC, single user 4K | * Disc Monitor 8K          |
| * BASIC, multi-user 8K  | * Real Time Monitor 2K     |
| COBOL                   | Time Sharing Monitor       |
| RPG                     | * Batch Monitor 8K         |
| PL1                     | * Other: communications ?K |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPUTER AUTOMATION ALPHA LSI

A general-purpose computer, also available in a stripped version, primarily for OEM users. Introduced in 1973, cost of a 4K system is \$2,350 (\$990 for Naked LSI)

## FEATURES

Upward compatible  
 \* Field Service  
 Applications Software  
 \* Conversational Languages  
 \* Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \* Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 1-256K core  
 Cycle Time: 1.6 usec  
 Add Time: 9.2 usec  
 Instructions<sup>1</sup>: ABM  
 Accumulators: 1  
 Index Registers: 1  
 Communications<sup>2</sup>: D/AST  
 Transfer Rate: 1.25 mc  
 CPU Features<sup>3</sup>: BDI/CFMP  
 Interface Slots: 4

Removable Disk: no  
 Fixed Head Disk: .064-1 mc  
 MagTape: 10 kc (12.5 ips)  
 30 kc (37.5 ips)  
 Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 100 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, A-D

## SOFTWARE

\* Assembler 4K, 8K  
 Assembler, Macro  
 \* FORTRAN 4K  
 \* BASIC, single user 4K  
 \* BASIC, multi-user 8K  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 \* Disc Monitor 8K  
 \* Real Time Monitor 2K  
 Time Sharing Monitor  
 \* Batch Monitor 8K  
 \* Other: communications ?K

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

CONTROL DATA CORPORATION  
8100 34th Avenue South  
Minneapolis, Minnesota 55440 USA  
(612) 853-8100

Control Data manufactures and markets a wide variety of large scale computers and peripheral devices, as well as a series of general purpose minicomputers used in scientific data processing, industrial control, and medical records handling applications.

Established:	1957
Revenues:	\$664 M
Net Earnings (loss):	\$10.3 M (12/72)
Offices:	World wide
Sales:	Over 500 of the 1700 series computers.

PRODUCTS include the 1700, SC1700, and System 17 computers and the following peripheral devices: disks, magnetic tape, line printers, card and paper tape equipment.

SOFTWARE support includes an Assembler, Macro Assembler and BASIC, Process Control, and FORTRAN compilers; Real Time, Real Time with batch background, and disk monitors; as well as extensive applications packages in medical, process control, and communications.

## CONTROL DATA 1700

A general purpose computer with extensive software support for medical, process control, and communications applications. Introduced in 1966, cost of a 4K processor is \$20,000.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| Conversational Languages   | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

Word size: 16 bits	Removable Disk: 40 mc
Capacity: 4-32K core	Fixed Head Disk: .5 mc
Cycle Time: 1.1 usec	Mag Tape: 30 kc (37.5 ips)
Add Time: 2.2 usec	
Instructions <sup>1</sup> : AM	Tape Cassettes: no
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, yes
Communications <sup>2</sup> : /DAST	Line Printer: 300-1200 lpm
Transfer Rate: 1.8 mc	Serial Printer: no
CPU Features <sup>3</sup> : FIMP/C	Display Terminal: yes
Interface Slots: ?	Multiplexor: asyn, syn, A-D

## SOFTWARE

- |                       |                        |
|-----------------------|------------------------|
| * Assembler 4K        | ALGOL                  |
| * Assembler, Macro 8K | APT                    |
| * FORTRAN 8K, 16K     |                        |
| BASIC, single user    | * Disc Monitor 16K     |
| BASIC, multi-user     | * Real Time Monitor 8K |
| COBOL                 | Time Sharing Monitor   |
| RPG                   | Batch Monitor          |
| PLI                   | Other:                 |

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## CONTROL DATA SCI700

A general purpose computer with extensive software support in medical, process control, and communications applications. Introduced in 1970, cost of a 4K processor is \$15,900.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: 1.5 usec
- Add Time: 3.0 usec
- Instructions<sup>1</sup>: AM
- Accumulators: 1
- Index Registers: 2
- Communications<sup>2</sup>: /DAST
- Transfer Rate: 1.8 mc
- CPU Features<sup>3</sup>: FIMP/C
- Interface Slots: ?
- Removable Disk: 4.0 mc
- Fixed Head Disk: .5 mc
- MagTape: 30 kc (37.5 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 300-1200 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K, 16K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 16K
- \* Real Time Monitor 8K
- Time Sharing Monitor
- Batch Monitor
- Other:

---

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## CONTROL DATA SYSTEM 17

The newest member of the 17 series of general purpose computers, with the same extensive software support. Introduced in 1973, cost of a 4K system is \$13,500.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
*Conversational Languages	*Process Control
*Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 4.4 mc
Capacity: 4-64K mos	Fixed Head Disk: no
Cycle Time: .8/.6 usec	MagTape: 60 kc (37.5 ips)
Add Time: 1.8/1.2 usec	
Instructions <sup>1</sup> : AM	Tape Cassettes: no
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/AST	Line Printer: 300-1200 lpm
Transfer Rate: 1.6 mc	Serial Printer: no
CPU Features <sup>3</sup> : FIMP/	Display Terminal: yes
Interface Slots: ?	Multiplexor: asyn, syn, A-D

## SOFTWARE

*Assembler 4K	ALGOL
*Assembler, Macro 8K	APT
*FORTRAN 8K	
*BASIC, single user ?K	*Disc Monitor 16K
BASIC, multi-user	*Real Time Monitor 8K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

DATA GENERAL CORPORATION  
Route 9  
Southboro, Massachusetts 01772 USA  
(617) 485-9100

Data General manufactures and markets general-purpose, real-time computers for scientific and business data processing, communications, remote data terminals, and message switching.

Established: 1969  
Revenue: \$30.3 m  
Net Earnings (loss): \$3.9 m (6/72)  
Offices: Worldwide  
Sales: Over 5000 NOVA computer systems.

PRODUCTS include the Nova, 800, 820, 840, 1200, 1210, 1220, 1230 and SUPERNOVA computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, 1-32 user BASIC, FORTRAN IV and V, and ALGOL compilers; disk, real-time, and batch monitors; and applications packages.



## DATA GENERAL NOVA 800

A general-purpose computer used for nearly all small computer applications. Introduced in 1971, cost of a 4K system is \$6,950.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-24 mc   |
| Capacity: 2-32K core                 | Fixed Head Disk: .13-.79 mc |
| Cycle Time: .8 usec                  | Mag Tape: 10 kc (12.5 ips)  |
| Add Time: .8 usec                    | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : ABM/F    | Tape Cassettes: yes         |
| Accumulators: 4                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                   | Card RD, PN: yes, yes,      |
| Communications <sup>2</sup> : D/ABST | Line Printer: 356 lpm       |
| Transfer Rate: 2.5 mc                | Serial Printer: 165 cps     |
| CPU Features <sup>3</sup> : BDI/CF   | Display Terminal: yes       |
| Interface Slots: 5/15                | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | * ALGOL 12K            |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 12K, 28K      |                        |
| * BASIC, single user 8K | * Disc Monitor 12K     |
| * BASIC, multi-user 16K | * Real Time Monitor 4K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 16K    |
| PL1                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATA GENERAL 3

## DATA GENERAL NOVA 820

The middle member of the 800 series, with the same extensive software support. Introduced in 1971, cost of a 4K system is \$6,450.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 2-32K core
- Cycle Time: .8 usec
- Add Time: .8 usec
- Instructions<sup>1</sup>: ABM/F
- Accumulators: 4
- Index Registers: 2
- Communications<sup>2</sup>: D/ABST
- Transfer Rate: 2.5 mc
- CPU Features<sup>3</sup>: BDI/CF
- Interface Slots: 7
- Removable Disk: 2.4-24 mc
- Fixed Head Disk: .13-.79 mc
- MagTape: 10 kc (12.5 ips)  
60 kc (75 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 356 lpm
- Serial Printer: 165 cps
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
- \* BASIC, single user 8K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PL1
- \* ALGOL 12K  
APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K  
Time Sharing Monitor
- \* Batch Monitor 16K  
Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATA GENERAL NOVA 840

The top of the 800 series, the 840 offers large system capacity. Introduced in 1973, cost of a 16K system is \$16,880.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-24 mc   |
| Capacity: 2-131K core                | Fixed Head Disk: .13-.79 mc |
| Cycle Time: .8 usec                  | MagTape: 10 kc (12.5 ips)   |
| Add Time: .8 usec                    | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : ABM/F    | Tape Cassettes: yes         |
| Accumulators: 4                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/ABST | Line Printer: 356 lpm       |
| Transfer Rate: 2.5 mc                | Serial Printer: 165 cps     |
| CPU Features <sup>3</sup> : BDIM/CF  | Display Terminal: yes       |
| Interface Slots: 12                  | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | * ALGOL 12K            |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 12K           |                        |
| * BASIC, single user 8K | * Disc Monitor 12K     |
| * BASIC, multi-user 16K | * Real Time Monitor 4K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 16K    |
| PL1                     | Other:                 |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATA GENERAL 5

## DATA GENERAL NOVA 1200

The 1200 series is an economical line of general-purpose computers for small computer applications. Introduced in 1970, cost of a 4K system is \$5,450.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 1-32K core  
Cycle Time: 1.2 usec  
Add Time: 1.35 usec  
Instructions<sup>1</sup>: AB/FM  
Accumulators: 4  
Index Registers: 2  
Communications<sup>2</sup>: D/ABST  
Transfer Rate: 1.66 mc  
CPU Features<sup>3</sup>: BDI/CF  
Interface Slots: 6/16

Removable Disk: 2.4-24 mc  
Fixed Head Disk: .13-.79 mc  
MagTape: 10 kc (12.5 ips)  
60 kc (75 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 356 lpm  
Serial Printer: 165 cps  
Display Terminal: yes  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
- \* BASIC, single user 8K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PL1

- \* ALGOL 12K
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K
- Time Sharing Monitor
- \* Batch Monitor 16K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATA GENERAL NOVA 1210

A general-purpose, real-time computer with extensive software. Introduced in 1972, cost of a 4K system is \$4,350.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-24 mc   |
| Capacity: 1-24K core                 | Fixed Head Disk: .13-.79 mc |
| Cycle Time: 1.2 usec                 | Mag Tape: 10 kc (12.5 ips)  |
| Add Time: 1.35 usec                  | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : AB/H     | Tape Cassettes: yes         |
| Accumulators: 4                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/ABST | Line Printer: 356 lpm       |
| Transfer Rate: 1.66 mc               | Serial Printer: 165 cps     |
| CPU Features <sup>3</sup> : BDI/CF   | Display Terminal: yes       |
| Interface Slots: 2                   | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | * ALGOL 12K            |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 12K           |                        |
| * BASIC, single user 8K | * Disc Monitor 12K     |
| * BASIC, multi-user 16K | * Real Time Monitor 4K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 16K    |
| PLI                     | Other:                 |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATA GENERAL 7

## DATA GENERAL NOVA 1220

A general-purpose, real-time computer used in a wide variety of applications. Introduced in 1972, cost of a 4K system is \$5,250.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 1-32K core
- Cycle Time: 1.2 usec
- Add Time: 1.35 usec
- Instructions<sup>1</sup>: AB/FM
- Accumulators: 4
- Index Registers: 2
- Communications<sup>2</sup>: D/ABST
- Transfer Rate: 1.66 mc
- CPU Features<sup>3</sup>: BDI/C
- Interface Slots: 8
- Removable Disk: 2.4-24 mc
- Fixed Head Disk: .13-.79 mc
- Mag Tape: 10 kc (12.5 ips)  
60 kc (75 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 356 lpm
- Serial Printer: 165 cps
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
- \* BASIC, single user 8K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PLI
- \* ALGOL 12K
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K
- Time Sharing Monitor
- \* Batch Monitor 16K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATA GENERAL NOVA 1230

A general-purpose, real-time computer used in a variety of applications. Introduced in 1972, cost of an 8K system is \$7,450.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| Upward compatible         | Microprogrammable |
| *Field Service            | Virtual Memory    |
| *Applications Software    | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| *Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-24 mc   |
| Capacity: 8-32K core                 | Fixed Head Disk: .13-.79 mc |
| Cycle Time: 1.2 usec                 | Mag Tape: 10 kc (12.5 ips)  |
| Add Time: 1.35 usec                  | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : AB/M     | Tape Cassettes: yes         |
| Accumulators: 4                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/ABST | Line Printer: 356 lpm       |
| Transfer Rate: 1.66 mc               | Serial Printer: 165 cps     |
| CPU Features <sup>3</sup> : BDI/C    | Display Terminal: yes       |
| Interface Slots: 15                  | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | * ALGOL 12K            |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 12K           |                        |
| * BASIC, single user 8K | * Disc Monitor 12K     |
| * BASIC, multi-user 16K | * Real Time Monitor 4K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 16K    |
| PL1                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATA GENERAL SUPERNOVA

A general-purpose, real-time computer used in a wide variety of applications. Introduced in 1970, cost of a 4K system is \$9,600.

### FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 1-32K core
- Cycle Time: .81.3 usec
- Add Time: .8/.3 usec
- Instructions<sup>1</sup>: AB/FM
- Accumulators: 4
- Index Registers: 2
- Communications<sup>2</sup>: D/ABST
- Transfer Rate: 2.5 mc
- CPU Features<sup>3</sup>: BDI/CM
- Interface Slots: 4
- Removable Disk: 2.4-24 mc
- Fixed Head Disk: .13-.79 mc
- Mag Tape: 10 kc (12.5 ips)
- 60 kc (75 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 356 lpm
- Serial Printer: 165 cps
- Display Terminal: yes
- Multiplexor: asyn, syn- A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
- \* BASIC, single user 8K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PLI
- \* ALGOL 12K
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K
- Time Sharing Monitor
- \* Batch Monitor 16K
- Other:

#### <sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup>CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATA GENERAL NOVA 2

The latest Nova computer for economical general purpose real-time use. Introduced in 1973, cost of a 4K system (5 systems minimum) is \$4,150.

## FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 2.4-24 mc
Capacity: 4-32K core	Fixed Head Disk: .13-.79 mc
Cycle Time: .8 usec	MagTape: 10 kc (12.5 ips)
Add Time: .8 usec	60 kc (75 ips)
Instructions <sup>1</sup> : ABM/F	Tape Cassettes: yes
Accumulators: 4	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/ABST	Line Printer: 356 lpm
Transfer Rate: 2.5 mc	Serial Printer: 165 cps
CPU Features <sup>3</sup> : BDI/CF	Display Terminal: yes
Interface Slots: 4/10	Multiplexor: asyn, syn, A-D

## SOFTWARE

- |                         |                       |
|-------------------------|-----------------------|
| * Assembler 4K          | *ALGOL 12K            |
| * Assembler, Macro 8K   | APT                   |
| * FORTRAN 12K           |                       |
| * BASIC, single user 8K | *Disc Monitor 12K     |
| * BASIC, multi-user 16K | *Real Time Monitor 4K |
| COBOL                   | Time Sharing Monitor  |
| RPG                     | *Batch Monitor 16K    |
| PL1                     | Other:                |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATACRAFT 1

## COMPANY PROFILE

DATACRAFT CORPORATION  
1200 NW 70th Street  
Ft. Lauderdale, Florida 33307 USA  
P.O. Box 23550  
(305) 974-1700

Datacraft manufactures and markets a family of medium-scale, real-time computers for scientific data processing and process control applications.

Established: 1967

Revenues: \$6.36 M (5/72)

Net Earnings (loss): \$159 K

Offices: In US and Belgium

Sales: Over 200 systems to date

PRODUCTS available include the 6024/1, 6024/3, 6024/4, and 6024/5 computers, and the following peripheral devices: disks, magnetic tape, line and serial printers, card and paper tape equipment.

SOFTWARE support includes a Macro Assembler, BASIC, FORTRAN IV, RPG and SNOBOL compilers; disk, tape, and real-time with batch background monitors; and a math library.

## DATA CRAFT 6024/1

A general-purpose, real-time computer with 24 bit word length for efficient scientific processing and process control. Introduced in 1969, cost of an 8K system is \$51,750.

## FEATURES

- \*Upward compatible
- \*Field Service
- \*Applications Software
- \*Conversational Languages
- \*Communications Processor
- Microprogrammable
- Virtual Memory
- \*Multiprocessor
- \*Process Control
- Time Sharing

## HARDWARE

- Word size: 24 bits
- Capacity: 8-65K core
- Cycle Time: .6 usec
- Add Time: 1.2 usec
- Instructions<sup>1</sup>: ABM/EF
- Accumulators: 5
- Index Registers: 3
- Communications<sup>2</sup>: M/ABDS
- Transfer Rate: 5.0 mc
- CPU Features<sup>3</sup>: IP/CFM
- Interface Slots: 28 chan.
- Removable Disk: 7-56 mc
- Fixed Head Disk: 1-2 mc
- Mag Tape: 36 kc (45 ips)
- 320 kc (200 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 125-1000 lpm
- Serial Printer: no
- Display Terminal: no
- Multiplexor: asyn, syn, A-D

## SOFTWARE

- Assembler
- \* Assembler, Macro 4K
- \* FORTRAN ?K
- \* BASIC, single user 12K
- BASIC, multi-user
- \* COBOL (SNOBOL) 32K
- \* RPG 16K
- PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 8K, 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATACRAFT 3

DATACRAFT 6024/3

A general-purpose, real-time computer with a 24 bit word for scientific processing and process control. Introduced in 1970, cost of an 8K system is \$33,150.

## FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- \* Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

Word size: 24 bits  
Capacity: 8-65K core  
Cycle Time: 1.0 usec  
Add Time: 2.0 usec  
Instructions<sup>1</sup>: ABM/EF  
Accumulators: 5  
Index Registers: 3  
Communications<sup>2</sup>: M/ABS  
Transfer Rate: 2.5 mc  
CPU Features<sup>3</sup>: IP/CFM  
Interface Slots: 14 chan.  
Removable Disk: 7-56 mc  
Fixed Head Disk: .1-2 mc  
MagTape: 36 kc (45 ips)  
                  320 kc (200 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 125-1000 lpm  
Serial Printer: no  
Display Terminal: no  
Multiplexor: syn, asyn, A-D

## SOFTWARE

Assembler  
\* Assembler, Macro 4K  
\* FORTRAN ?K  
\* BASIC, single user 12K  
  BASIC, multi-user  
\* COBOL (SNOBOL) 32K  
\* RPG 16K  
  PLI  
ALGOL  
APT  
\* Disc Monitor 8K  
\* Real Time Monitor 8K, 12K  
  Time Sharing Monitor  
  Batch Monitor  
  Other:

### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DATACRAFT 6024/4

The newest 6024 series scientific processing computer, with virtual memory and large capacity. Introduced in 1973, cost of an 8K system is \$20,250.

## FEATURES

Upward compatible  
 \*Field Service  
 Applications Software  
 \*Conversational Languages  
 \*Communications Processor

Microprogrammable  
 \*Virtual Memory  
 Multiprocessor  
 \*Process Control  
 Time Sharing

## HARDWARE

Word size: 24 bits  
 Capacity: 8-262K core  
 Cycle Time: .75 usec  
 Add Time: 1.5 usec  
 Instructions<sup>1</sup>: ABM/EF  
 Accumulators: 5  
 Index Registers: 3  
 Communications<sup>2</sup>: M/ABD  
 Transfer Rate: 3.9 mc  
 CPU Features<sup>3</sup>: IP/CDFM  
 Interface Slots: 24 chan.

Removable Disk: 7-56 mc  
 Fixed Head Disk: .1-2 mc  
 Mag Tape: 36 kc (45 ips)  
 320 kc (200 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 125-1000 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

Assembler  
 \*Assembler, Macro 4K  
 \*FORTRAN ?K  
 \*BASIC, single user 12K  
 BASIC, multi-user  
 \*COBOL (SNOBOL) 32K  
 \*RPG 16K  
 PL1

ALGOL  
 APT  
 \*Disc Monitor 8K  
 \*Real Time Monitor 8K, 12K  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

**<sup>1</sup>INSTRUCTIONS:**

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

**<sup>2</sup>COMMUNICATIONS:**

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

**<sup>3</sup>CPU FEATURES**

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATA CRAFT 5

## DATA CRAFT 6024/5

The middle of the 6024 line of scientific processing computers. Introduced in 1972, cost of a 4K system is \$12,850.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- \* Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 24 bits
- Capacity: 4-65K core
- Cycle Time: .95 usec
- Add Time: 1.9 usec
- Instructions<sup>1</sup>: ABM/EF
- Accumulators: 5
- Index Registers: 3
- Communications<sup>2</sup>: M/ABD
- Transfer Rate: 2.0 mc
- CPU Features<sup>3</sup>: IP/CFM
- Interface Slots: 14 chan
- Removable Disk: 7-56 mc
- Fixed Head Disk: .1-2 mc
- Mag Tape: 36 kc (45 ips)
- 320 kc (200 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 125-1000 lpm
- Serial Printer: no
- Display Terminal: no
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- Assembler
- \* Assembler, Macro 4K
- \* FORTRAN ?K
- \* BASIC, single user 12K
- BASIC, multi-user
- \* COBOL (SNOBOL) 32K
- \* RPG 16K
- PLI
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 8K, 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATAPOINT 1

## COMPANY PROFILE

DATAPOINT CORPORATION  
9225 Datapoint Drive  
San Antonio, Texas 78284 USA  
(512) 696-4520

Datapoint manufactures and markets a family of intelligent terminals for business data processing.

Established:	1968
Revenue:	\$18.5 m
Net Earnings (loss):	\$1.9 m (6/73)
Offices:	California and Canada
Sales:	Over 2000 of the Datapoint 2200 computer systems.

PRODUCTS available include the Datapoint 2200 Version I and Version II computers, plus the following peripheral devices: disk and magnetic tape cassette.

SOFTWARE support includes an Assembler, BASIC and RPG compilers; disk and time sharing monitors; and extensive business applications packages.

## DATAPOINT 2200 VERSION I

An intelligent terminal for business data processing, 2000 of the 2200 computers have been sold since introduction in 1970. Cost of a 4K system with CRT and cassette drive is \$6,630.

## FEATURES

*Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 8	Removable Disk: 2.5 mw
Capacity: 2-8K MOS	Fixed Head Disk: no
Cycle Time: 8.0	Mag Tape: no
Add Time: 16.0	
Instructions <sup>1</sup> : none	Tape Cassettes: yes
Accumulators: 1	Paper Tape RD, PN: no, no
Index Registers: 0	Card RD, PN: yes, no
Communications <sup>2</sup> : /AB T	Line Printer: no
Transfer Rate: 2 kc	Serial Printer: 30-300 cps
CPU Features <sup>3</sup> : FI	Display Terminal: yes
Interface Slots: ?	Multiplexor: asyn

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
*RPG ?K	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DATAPOINT 3

## DATAPOINT 2200 VERSION II

A faster version of the 2200 data processing terminals introduced in 1972. Cost of a 4K system with CRT and cassettes is \$8,570.

### FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages Communications Processor
- Microprogrammable
- \* Virtual Memory
- Multiprocessor
- Process Control
- \* Time Sharing

### HARDWARE

- Word size: 8
- Capacity: 4-16 MOS
- Cycle Time: 1.6
- Add Time: 4.8
- Instructions<sup>1</sup>: S
- Accumulators: 1
- Index Registers: 0
- Communications<sup>2</sup>: /ABT
- Transfer Rate: 30 kc
- CPU Features<sup>3</sup>: CFI
- Interface Slots: ?
- Removable Disk: 2.5 mw
- Fixed Head Disk: no
- Mag Tape: no
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: no
- Serial Printer: 30-300 cps
- Display Terminal: yes
- Multiplexor: asyn

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro  
FORTRAN
- \* BASIC, single user 16K  
BASIC, multi-user  
COBOL
- \* RPG ?K  
PL1
- ALGOL  
APT
- \* Disc Monitor 12K  
Real Time Monitor
- \* Time Sharing Monitor 16K  
Batch Monitor  
Other:

#### <sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup>CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

DIGITAL COMPUTER CONTROLS INCORPORATED  
12 Industrial Road  
Fairfield, New Jersey 07006 USA  
(201) 227-4861

Digital Computer Controls manufactures and markets several small computers fully compatible with the Digital Equipment PDP-8 and Data General NOVA 1200, with similar peripheral and software support.

Established: 1969  
Revenue: N/A  
Net Earnings (loss): N/A  
Offices: Worldwide  
Sales: N/A

PRODUCTS available include the D-112, D-112H, D-116, and D-116H computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, line and serial printers, display terminals, paper tape and card equipment.

SOFTWARE support includes Assemblers, Macro Assemblers, BASIC, FORTRAN, and ALGOL compilers; disk, real time, and time sharing monitors.

## DIGITAL COMPUTER CONTROLS D-112

A general-purpose computer fully compatible with the Digital Equipment PDP-8. Introduced in 1970, cost of a 4K system is \$3,760.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| *Upward compatible        | Microprogrammable |
| *Field Service            | Virtual Memory    |
| Applications Software     | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| Communications Processor  | *Time Sharing     |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 12 bits                 | Removable Disk: 3.2 mc      |
| Capacity: 4-32K core               | Fixed Head Disk: 64-500 kc  |
| Cycle Time: 1.2 usec               | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.4 usec                 | Tape Cassettes: yes         |
| Instructions <sup>1</sup> : A/BEFM | Paper Tape RD, PN: yes, yes |
| Accumulators: 1                    | Card RD, PN: yes, yes       |
| Index Registers: 0                 | Line Printer: 300 lpm       |
| Communications <sup>2</sup> : D/AB | Serial Printer: no          |
| Transfer Rate: 1.6 mc              | Display Terminal: yes       |
| CPU Features <sup>3</sup> : IM/CFP | Multiplexor: A-D            |
| Interface Slots: ?                 |                             |

## SOFTWARE

- |                        |                           |
|------------------------|---------------------------|
| *Assembler 4K          | *ALGOL 8K                 |
| *Assembler, Macro 8K   | APT                       |
| *FORTRAN 4K, 8K        |                           |
| *BASIC, single user 8K | *Disc Monitor 8K          |
| BASIC, multi-user      | Real Time Monitor         |
| COBOL                  | *Time Sharing Monitor 12K |
| RPG                    | Batch Monitor             |
| PL1                    | Other:                    |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL COMPUTER 3

## DIGITAL COMPUTER CONTROLS D-112H

A faster version of the D-112, fully compatible with the Digital Equipment PDP-8. Introduced in 1971, cost of a 4K system is \$4,265.

### FEATURES

- Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- \* Time Sharing

### HARDWARE

- Word size: 12 bits
- Capacity: 4-32K core
- Cycle Time: .9/.2 usec
- Add Time: 2.4 usec
- Instructions<sup>1</sup>: AB/EFM
- Accumulators: 1
- Index Registers: 24
- Communications<sup>2</sup>: D/AB
- Transfer Rate: 1.6 mc
- CPU Features<sup>3</sup>: FIM/C
- Interface Slots: ?
- Removable Disk: 3.2 mc
- Fixed Head Disk: 64-500 kc
- Mag Tape: 36 kc (45 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 300 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 4K, 8K
- \* BASIC, single user 8K
- BASIC, multi-user
- COBOL
- RPG
- PLI
- \* ALGOL 8K
- APT
- \* Disc Monitor 8K
- Real Time Monitor
- \* Time Sharing Monitor 12K
- Batch Monitor
- Other:

#### <sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup>CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL COMPUTER CONTROLS D-116

A general-purpose computer, fully compatible with the Data General NOVA 1200 series. Introduced in 1971, cost of a 4K system is \$4,130.

## FEATURES

- |                                      |                   |
|--------------------------------------|-------------------|
| *Upward compatible                   | Microprogrammable |
| *Field Service Applications Software | Virtual Memory    |
| *Conversational Languages            | Multiprocessor    |
| *Communications Processor            | *Process Control  |
|                                      | Time Sharing      |

## HARDWARE

Word size: 16 bits	Removable Disk: 2.4-24 mc
Capacity: 4-128K core	Fixed Head Disk: .260-2 mc
Cycle Time: 1.2 usec	Mag Tape: 10 kc (12.5 ips)
Add Time: 2.4 usec	36 kc (45 ips)
Instructions <sup>1</sup> : AB/M	Tape Cassettes: no
Accumulators: 4	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/ABST	Line Printer: 125-245 lpm
Transfer Rate: 1.6 mc	Serial Printer: 60-100 cps
CPU Features <sup>3</sup> : FI/CM	Display Terminal: yes
Interface Slots: 7/17	Multiplexor: asyn, syn, A-D

## SOFTWARE

* Assembler 4K	* ALGOL ?K
Assembler, Macro	APT
* FORTRAN 8K	
* BASIC, single user 4K	* Disc Monitor ?K
* BASIC, multi-user 8K	* Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL COMPUTER 5

## DIGITAL COMPUTER CONTROLS D-116H

A general-purpose computer, fully compatible with the Data General NOVA 1200 series. Introduced in 1972, cost of a 4K system is \$4,330.

### FEATURES

- Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-128K core  
Cycle Time: .96 usec  
Add Time: ?  
Instructions<sup>1</sup>: AB/M  
Accumulators: 4  
Index Registers: 2  
Communications<sup>2</sup>: D/ABST  
Transfer Rate: 2.1 mc  
CPU Features<sup>3</sup>: FI/CM  
Interface Slots: ?

Removable Disk: 2.4-24 mc  
Fixed Head Disk: .26-2 mc  
Mag Tape: 10 kc (12.5 ips)  
                  36 kc (45 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 125-245 lpm  
Serial Printer: 60-100 cps  
Display Terminal: yes  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K  
  Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 8K  
  COBOL  
  RPG  
  PL1

- \* ALGOL ?K  
  APT
- \* Disc Monitor ?K
- \* Real Time Monitor ?K  
  Time Sharing Monitor  
  Batch Monitor  
  Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

DIGITAL EQUIPMENT CORPORATION  
146 Main Street  
Maynard, Massachusetts 01754 USA  
(617) 897-5111

Digital Equipment manufacturers and markets a broad line of general-purpose and scientific computers, used in every small-computer application area. Offering extensive software support, Digital is the major manufacturer of minicomputers in the world.

Established: 1957

Revenues: \$265.5 m

Net Earnings (loss): \$23.5 m (7/73)

Offices: Worldwide

Sales: Over 26,000 small-computer systems

PRODUCTS include the PDP-8E, 8F, 11/05, 11/10, 11/15, 11/20, 11/40, 11/45, 12, and 15 computers as well as the following peripheral devices: disks, magnetic tape cassettes and transports, serial and line printers, display terminals, and paper tape and card equipment.

SOFTWARE support includes Assemblers, Macro Assemblers, 1-32 user BASIC, FORTRAN, DIBOL, and ALGOL compilers, disk, real time, batch and time sharing monitors, and numerous applications packages for virtually every small-computer applications area.

## DIGITAL EQUIPMENT PDP-8E

A general-purpose computer widely used for nearly every small-computer application. Introduced in 1970, over 8,500 have been sold. Cost of a 4K system is \$4,490.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| Upward compatible         | Microprogrammable |
| *Field Service            | Virtual Memory    |
| *Applications Software    | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| *Communications Processor | *Time Sharing     |

## HARDWARE

- |                                     |                             |
|-------------------------------------|-----------------------------|
| Word size: 12 bits                  | Removable Disk: 3.2 mc      |
| Capacity: 4-32K core                | Fixed Head Disk: no         |
| Cycle Time: 1.2 usec                | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.4 usec                  |                             |
| Instructions <sup>1</sup> : AB/EFM  | Tape Cassettes: yes         |
| Accumulators: 1                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 0                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/ABT | Line Printer: no-350 lpm    |
| Transfer Rate: 1.6 mc               | Serial Printer: 30-165 cps  |
| CPU Features <sup>3</sup> : I/CFMP  | Display Terminal: yes       |
| Interface Slots: 10/63              | Multiplexor: A-D            |

## SOFTWARE

- |                         |                            |
|-------------------------|----------------------------|
| * Assembler 4K, 8K      | * ALGOL 4K                 |
| * Assembler, Macro 4K   | APT                        |
| * FORTRAN 4K, 8K        |                            |
| * BASIC, single user 8K | * Disc Monitor 8K          |
| BASIC, multi-user       | * Real Time Monitor 8K     |
| * COBOL (DIBOL) 8K      | * Time Sharing Monitor 12K |
| RPG                     | Batch Monitor              |
| PL1                     | Other:                     |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL EQUIPMENT 3

## DIGITAL EQUIPMENT PDP-8F

A general-purpose computer widely used in every application area. Introduced in 1972, 3000 have been sold. Cost of a 4K system is \$3,990.

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | * Time Sharing    |

### HARDWARE

- |                                     |                             |
|-------------------------------------|-----------------------------|
| Word size: 12 bits                  | Removable Disk: 3.2 mc      |
| Capacity: 4-16K core                | Fixed Head Disk: no         |
| Cycle Time: 1.2 usec                | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.4 usec                  |                             |
| Instructions <sup>1</sup> : AB/EFM  | Tape Cassettes: yes         |
| Accumulators: 1                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 0                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : /ABDT | Line Printer: 170-350 lpm   |
| Transfer Rate: 1.6 mc               | Serial Printer: 30-165 cps  |
| CPU Features <sup>3</sup> : I/CFMP  | Display Terminal: yes       |
| Interface Slots: 10/45              | Multiplexor: A-D            |

### SOFTWARE

- |                         |                            |
|-------------------------|----------------------------|
| * Assembler 4K, 8K      | * ALGOL 4K                 |
| * Assembler, Macro 4K   | APT                        |
| * FORTRAN 4K, 8K        |                            |
| * BASIC, single user 8K | * Disc Monitor 8K          |
| BASIC, multi-user       | * Real Time Monitor 8K     |
| * COBOL (DIBOL) 8K      | * Time Sharing Monitor 12K |
| RPG                     | Batch Monitor              |
| PLI                     | Other:                     |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL EQUIPMENT PDP-11/05

A general-purpose, real-time computer for OEM use. Introduced in 1972, cost of a 4k system is \$4,795.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| *Upward compatible        | Microprogrammable |
| *Field Service            | Virtual Memory    |
| *Applications Software    | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| *Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-40 mc   |
| Capacity: 4-28k core                 | Fixed Head Disk: 64-256 kc  |
| Cycle Time: .9 usec                  | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.3 usec                   |                             |
| Instructions <sup>1</sup> : ABS/EM   | Tape Cassettes: yes         |
| Accumulators: 8                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 8                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 253-1200 lpm  |
| Transfer Rate: 1.66 mc               | Serial Printer: 30 cps      |
| CPU Features <sup>3</sup> : CFI/P    | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, A-D      |

## SOFTWARE

- |                        |                        |
|------------------------|------------------------|
| *Assembler 4K          | ALGOL                  |
| *Assembler, Macro 4K   | APT                    |
| *FORTRAN 8K            |                        |
| *BASIC, single user 4K | *Disc Monitor 8K       |
| *BASIC, multi-user 16K | *Real Time Monitor 16K |
| COBOL                  | Time Sharing Monitor   |
| RPG                    | *Batch Monitor 16K     |
| PL1                    | Other:                 |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL EQUIPMENT 5

## DIGITAL EQUIPMENT PDP-11/10

A general-purpose real-time computer at the low end of the 11 series of computers. Introduced in 1973, cost of an 8K system is \$6,995.

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

### HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-40 mc   |
| Capacity: 8-28K core                 | Fixed Head Disk: 64-256 kc  |
| Cycle Time: .9 usec                  | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.3 usec                   |                             |
| Instructions <sup>1</sup> : ABS/EM   | Tape Cassettes: yes         |
| Accumulators: 8                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 8                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 253-1200 lpm  |
| Transfer Rate: 1.66 mc               | Serial Printer: 30 cps      |
| CPU Features <sup>3</sup> : CFI/P    | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, A-D      |

### SOFTWARE

- |                         |                         |
|-------------------------|-------------------------|
| * Assembler 4K          | ALGOL                   |
| * Assembler, Macro 4K   | APT                     |
| * FORTRAN 8K            |                         |
| * BASIC, single user 4K | * Disc Monitor 8K       |
| * BASIC, multi-user 16K | * Real Time Monitor 16K |
| COBOL                   | Time Sharing Monitor    |
| RPG                     | * Batch Monitor 16K     |
| PL1                     | Other:                  |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL EQUIPMENT PDP-11/15

A general-purpose, real-time computer for OEM use. Introduced in 1971, cost of a 4K system is \$6,200.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-40 mc   |
| Capacity: 4-32K core                 | Fixed Head Disk: 64-256 kc  |
| Cycle Time: .9 usec                  | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.3 usec                   |                             |
| Instructions <sup>1</sup> : ABS/EM   | Tape Cassettes: yes         |
| Accumulators: 8                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 8                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 253-1200 lpm  |
| Transfer Rate: 2.2 mc                | Serial Printer: 30 cps      |
| CPU Features <sup>3</sup> : FI/CP    | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, A-D      |

## SOFTWARE

- |                         |                         |
|-------------------------|-------------------------|
| * Assembler 4K          | ALGOL                   |
| * Assembler, Macro 4K   | APT                     |
| * FORTRAN 8K            |                         |
| * BASIC, single user 4K | * Disc Monitor 8K       |
| * BASIC, multi-user 16K | * Real Time Monitor 16K |
| COBOL                   | Time Sharing Monitor    |
| RPG                     | * Batch Monitor 16K     |
| PL1                     | Other:                  |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL EQUIPMENT 7

## DIGITAL EQUIPMENT PDP-11/20

A general-purpose real-time computer in the middle of the 11 series of computers. Introduced in 1970, cost of a 4K system is \$9,300.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-124K core
- Cycle Time: .9 usec
- Add Time: 2.3 usec
- Instructions<sup>1</sup>: ABS/EM
- Accumulators: 8
- Index Registers: 8
- Communications<sup>2</sup>: D/ABST
- Transfer Rate: 2.2 mc
- CPU Features<sup>3</sup>: FI/CP
- Interface Slots: bus
- Removable Disk: 2.4-40 mc
- Fixed Head Disk: 64-250 kc
- Mag Tape: 36 kc (45 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 253-1200 lpm
- Serial Printer: 30 cps
- Display Terminal: yes
- Multiplexor: asyn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 4K
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 16K
- Time Sharing Monitor
- \* Batch Monitor 16K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL EQUIPMENT PDP-11/40

A general-purpose, real-time computer at the high end of the 11 series of computers. Introduced in 1973, cost of an 8K system is \$12,995.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-40 mc   |
| Capacity: 8-124K core                | Fixed Head Disk: 64-250 kc  |
| Cycle Time: .85 usec                 | Mag Tape: 36 kc (45 ips)    |
| Add Time: 2.3 usec                   |                             |
| Instructions <sup>1</sup> : ABS/EFM  | Tape Cassettes: yes         |
| Accumulators: 8                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 8                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 253-1200 lpm  |
| Transfer Rate: 2.3 mc                | Serial Printer: 30 cps      |
| CPU Features <sup>3</sup> : FI/CMP   | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, A-D      |

## SOFTWARE

- |                         |                         |
|-------------------------|-------------------------|
| * Assembler 4K          | ALGOL                   |
| * Assembler, Macro 4K   | APT                     |
| * FORTRAN 8K            |                         |
| * BASIC, single user 4K | * Disc Monitor 8K       |
| * BASIC, multi-user 16K | * Real Time Monitor 16K |
| COBOL                   | Time Sharing Monitor    |
| RPG                     | * Batch Monitor 16K     |
| PL1                     | Other:                  |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

DIGITAL EQUIPMENT 9

## DIGITAL EQUIPMENT PDP-11/45

A general-purpose, real-time computer used in diverse areas requiring 'large processor' power. Introduced in 1972, cost of a 4K system is \$19,400.

### FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable Virtual Memory
- \* Multiprocessor
- \* Process Control Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-124K core  
Cycle Time: .85/.3 usec  
Add Time: 2.3 usec  
Instructions<sup>1</sup>: ABS/EFM  
Accumulators: 8  
Index Registers: 8  
Communications<sup>2</sup>: DM/ABST  
Transfer Rate: 2.4 mc  
CPU Features<sup>3</sup>: FIP/BCDM  
Interface Slots: bus

Removable Disk: 2.4-40 mc  
Fixed Head Disk: 64-256 kc  
Mag Tape: 36 kc (45 ips)

Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 253-1200 lpm  
Serial Printer: 30 cps  
Display Terminal: yes  
Multiplexor: asyn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 4K
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 16K
- COBOL
- RPG
- PL1

ALGOL  
APT

- \* Disc Monitor 8K
- \* Real Time Monitor 16K  
Time Sharing Monitor
- \* Batch Monitor 16K
- \* Other: communications

#### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL EQUIPMENT PDP-12

A scientific data processing computer used primarily for laboratory control. Introduced in 1969, a complete 4K packaged system with A-D interfaces costs \$15,900.

## FEATURES

Upward compatible  
 \* Field Service  
 \* Applications Software  
 \* Conversational Languages  
 Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \* Process Control  
 \* Time Sharing

## HARDWARE

Word size: 12 bits  
 Capacity: 4-32K core  
 Cycle Time: 1.6 usec  
 Add Time: 3.2 usec  
 Instructions<sup>1</sup>: AB/EFM  
 Accumulators: 1  
 Index Registers: 0  
 Communications<sup>2</sup>: D/AS  
 Transfer Rate: 1.3 mc  
 CPU Features<sup>3</sup>: I/CFMP  
 Interface Slots: ?

Removable Disk: 3.2 mc  
 Fixed Head Disk: no  
 Mag Tape: 36 kc (45 ips)  
 Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 253-356 lpm  
 Serial Printer: 30 cps  
 Display Terminal: yes  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

\* Assembler 4K  
 \* Assembler, Macro 4K  
 \* FORTRAN 4K, 8K  
 \* BASIC, single user 8K  
 BASIC, multi-user  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 \* Disc Monitor 8K  
 \* Real Time Monitor 8K  
 \* Time Sharing Monitor 12K  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## DIGITAL EQUIPMENT PDP-15

A real-time computer for optimizing real-time and time-sharing functions. Introduced in 1969, cost of a 4K system is \$16,500.

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | * Multiprocessor  |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

### HARDWARE

- |                                     |                             |
|-------------------------------------|-----------------------------|
| Word size: 18 bits                  | Removable Disk: 30 mc       |
| Capacity: 4-128K core               | Fixed Head Disk: no         |
| Cycle Time: .80 usec                | MagTape: 36 kc (45 ips)     |
| Add Time: 1.6 usec                  | Tape Cassettes: yes         |
| Instructions <sup>1</sup> : AE/FM   | Paper Tape RD, PN: yes, yes |
| Accumulators: 1                     | Card RD, PN: yes, yes       |
| Index Registers: 1                  | Line Printer: 245-356 lpm   |
| Communications <sup>2</sup> : D/AMS | Serial Printer: 30-173 cps  |
| Transfer Rate: 3.0 mc               | Display Terminal: yes       |
| CPU Features <sup>3</sup> : I/BCFMP | Multiplexor: asyn, syn, A-D |
| Interface Slots: bus                |                             |

### SOFTWARE

- |                       |                             |
|-----------------------|-----------------------------|
| * Assembler 4K        | * ALGOL 8K                  |
| * Assembler, Macro 4K | APT                         |
| * FORTRAN 8K          | * Disc Monitor 16K          |
| BASIC, single user    | * Real Time Monitor 8K, 16K |
| BASIC, multi-user     | * Time Sharing Monitor 16K  |
| COBOL                 | * Batch Monitor 8K          |
| RPG                   | Other:                      |
| PL1                   |                             |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

DIGITAL SCIENTIFIC CORPORATION  
11455 Sorrento Valley Road  
San Diego, California 92121 USA  
(714) 453-6050

Digital Scientific manufactures and markets a micro-programmable processor for IBM 1130 emulation, plus specialized user-designed systems.

Established: 1967  
Revenue: N/A  
Net Earnings (loss): N/A (privately held)  
Offices: U.S.  
Sales: N/A

PRODUCTS available include the META 4 computer, plus the following peripheral devices: disks, magnetic tape, serial and line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, FORTRAN, COBOL, RPG, and ALGOL compilers and real time with multi-programming, time sharing, and batch monitors. All IBM 1130 and 1800 software can be used on the META 4 emulation processors.

## DIGITAL SCIENTIFIC META 4

A microprogrammable computer used for emulation of IBM 1130 and 1800 computers, and special purpose computer systems. Introduced in 1970, cost of a 4K system is \$27,800.

## FEATURES

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>Upward compatible</li> <li>* Field Service</li> <li>Applications Software</li> <li>Conversational Languages</li> <li>Communications Processor</li> </ul> | <ul style="list-style-type: none"> <li>* Microprogrammable Virtual Memory</li> <li>* Multiprocessor Process Control</li> <li>* Time Sharing</li> </ul> |
|---|--|

## HARDWARE

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>Word size: 16 bits</li> <li>Capacity: 4-65K core</li> <li>Cycle Time: .9 usec</li> <li>Add Time: 2.14 usec</li> <li>Instructions<sup>1</sup>: ABEM</li> <li>Accumulators: 32</li> <li>Index Registers: 32</li> <li>Communications<sup>2</sup>: D/ABST</li> <li>Transfer Rate: 2.2 mc</li> <li>CPU Features<sup>3</sup>: CDFI/MP</li> <li>Interface Slots: 9 chan</li> </ul> | <ul style="list-style-type: none"> <li>Removable Disk: 1-29 mc</li> <li>Fixed Head Disk: no</li> <li>Mag Tape: 30 kc (37.5 ips)<br/>60 kc (75 ips)</li> <li>Tape Cassettes: no</li> <li>Paper Tape RD, PN: yes, yes</li> <li>Card RD, PN: yes, yes</li> <li>Line Printer: 600 lpm</li> <li>Serial Printer: 15-165 cps</li> <li>Display Terminal: no</li> <li>Multiplexor: ?</li> </ul> |
|--|--|

## SOFTWARE

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>* Assembler ?K</li> <li>* Assembler, Macro ?K</li> <li>* FORTRAN ?K</li> <li>BASIC, single user</li> <li>BASIC, multi-user</li> <li>* COBOL ?K</li> <li>* RPG ?K</li> <li>PL1</li> </ul> | <ul style="list-style-type: none"> <li>* ALGOL ?K</li> <li>APT</li> <li>* Disc Monitor ?k</li> <li>* Real Time Monitor ?K</li> <li>* Time Sharing Monitor ?K</li> <li>* Batch Monitor ?K</li> <li>Other:</li> </ul> |
|---|---|

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

ELECTRONIC ASSOCIATES INCORPORATED  
185 Monmouth Parkway  
West Long Branch, New Jersey 07764 USA  
(201) 229-1100

Electronic Associates manufactures and markets a real-time computer for scientific data processing, monitoring, and control. Systems packages includes an analog processor in a dual processor configuration.

Established: 1945

Revenue: \$43.3 m

Net Earnings (loss): \$1.65 m (12/72)

Offices: World wide

Sales: N/A

PRODUCTS available include the PACER computer and an analog processor, plus the following peripheral devices: disks, magnetic tape cassettes and transports, serial and line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, FORTRAN IV, and BASIC-type compilers; disk and real-time with multi-programming monitors and math library.

## EAI PACER

A real-time computer for scientific data processing, measurement and control; and used in a dual processor configuration with analog computer. Introduced in 1972, cost of an 8K system is \$15,200.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	*Multiprocessor
*Conversational Languages	*Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 2.2 mc
Capacity: 8-32K core	Fixed Head Disk: .7-2.8 mc
Cycle Time: 1.0 usec	Mag Tape: 20 kc (25 ips)
Add Time: 2.0 usec	60 kc (75 ips)
Instructions <sup>1</sup> : AEM/F	Tape Cassettes: yes
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : M/AD	Line Printer: 245-1200 lpm
Transfer Rate: 2.0 mc	Serial Printer: 120 cps
CPU Features <sup>3</sup> : BPIM/C	Display Terminal: yes
Interface Slots: 4 chan.	Multiplexor: A-D

## SOFTWARE

* Assembler 8K	ALGOL
Assembler, Macro	APT
* FORTRAN 8K	
* BASIC, single user (DOI) 8K	* Disc Monitor 8K
BASIC, multi-user	* Real Time Monitor 16K
COBOL	Time Sharing Monitor
RPG	* Batch Monitor 8K
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

ELECTRONIC PROC 1

## COMPANY PROFILE

ELECTRONIC PROCESSORS INCORPORATED  
5050 South Federal Blvd  
Englewood, Colorado 80110  
(303) 798-9305

Electronic Processors, a subsidiary of Samsonite, manufactures and markets a family of 18-bit computers designed for general-purpose applications.

Established:	1970
Revenue:	N/A
Net Earnings (loss):	N/A
Offices:	World wide
Sales:	N/A

PRODUCTS available include the EPI-118 and 218 computers, plus the following peripheral devices: disks, magnetic tape, serial and line printers, and paper tape equipment.

SOFTWARE support includes an Assembler and a BASIC compiler; and a disk monitor.

## ELECTRONIC PROCESSORS EPI-118

A general-purpose, real-time computer primarily for OEM use. Introduced in 1971, cost of a 4K system is \$5,095.

## FEATURES

\*Upward compatible  
Field Service  
Applications Software  
\*Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\*Process Control  
Time Sharing

## HARDWARE

Word size: 18 bits  
Capacity: 4-32K core  
Cycle Time: .9 usec  
Add Time: 2.0 usec  
Instructions<sup>1</sup>: B  
Accumulators: 2  
Index Registers: 2  
Communications<sup>2</sup>: /DA  
Transfer Rate: 3.0 mc  
CPU Features<sup>3</sup>: FI/C  
Interface Slots: ?

Removable Disk: 1.8-4 mc  
Fixed Head Disk: no  
MagTape: 10 kc (12.5 ips)  
48 kc (60 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: no, no  
Line Printer: 120 lpm  
Serial Printer: 165 cps  
Display Terminal: yes  
Multiplexor: no

## SOFTWARE

\*Assembler 4K  
Assembler, Macro  
\*FORTRAN ?K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
  
Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

ELECTRONIC PROC 3

## ELECTRONIC PROCESSORS EPI-218

A general-purpose real-time computer primarily for OEM use. Introduced in 1973, cost of a 4K system \$3,990.

### FEATURES

Upward compatible  
Field Service  
Applications Software  
\* Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
Time Sharing

### HARDWARE

Word size: 18 bits  
Capacity: 4-32K core  
Cycle Time: .96 usec  
Add Time: 2.4 usec  
Instructions<sup>1</sup>: AB/M  
Accumulators: 3  
Index Registers: 3  
Communications<sup>2</sup>: /DA  
Transfer Rate: 2.7 mc  
CPU Features<sup>3</sup>: FI/CM  
Interface Slots: ?

Removable Disk: 1.8-4 mc  
Fixed Head Disk: no  
Mag Tape: 10 kc (12.5 ips)  
48 kc (60 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: no, no  
Line Printer: 120 lpm  
Serial Printer: 165 cps  
Display Terminal: yes  
Multiplexor: no

### SOFTWARE

\* Assembler 4K  
Assembler, Macro  
FORTRAN  
\* BASIC, single user ?K  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
\* Disc Monitor ?K  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

FOUR-PHASE 1

## COMPANY PROFILE

FOUR-PHASE SYSTEMS INCORPORATED  
10420 North Tantau Avenue  
Cupertino, California 95014 USA  
(408) 255-0900

Four-Phase manufactures and markets remote intelligent display terminal systems built around a minicomputer controller, used in IBM 2260 and 3270 simulation.

Established: 1969  
Revenues: N/A  
Net Earnings (loss): N/A (privately held)  
Offices: U.S., Japan, Brazil  
Sales: N/A

PRODUCTS available include the System IV/40 and IV/70 terminal systems, plus the following peripheral devices: disks, magnetic tape, serial and line printers, display terminals, and card readers.

SOFTWARE support includes an Assembler and COBOL compiler; a disk monitor and software packages for IBM 2260 and 3270 simulation.

## FOUR-PHASE SYSTEM IV/40

An intelligent terminal system used for IBM 2260 and 3270 simulation, with program development supported on IV/70. Introduced in 1973, cost of an 8K system is \$15,750.

## FEATURES

*Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
Conversational Languages	Process Control
*Communications Processor	Time Sharing

## HARDWARE

Word size: 24 bits	Removable Disk: 2.5 mc
Capacity: 8-24K mos	Fixed Head Disk: no
Cycle Time: 2.0 usec	Mag Tape: no
Add Time: 16.0 usec	
Instructions <sup>1</sup> : ABPM/D	Tape Cassettes: no
Accumulators: 5	Paper Tape RD, PN: no, no
Index Registers: 3	Card RD, PN: no, no
Communications <sup>2</sup> : D/AB	Line Printer: 300 lpm
Transfer Rate: 380 kc	Serial Printer: 30 cps
CPU Features <sup>3</sup> : CIP/	Display Terminal: yes
Interface Slots: 8 chan.	Multiplexor: asyn, syn

## SOFTWARE

Assembler	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

FOUR-PHASE 3

## FOUR-PHASE SYSTEM IV/70

An intelligent terminal system with minicomputer controller. Introduced in 1971, cost of a 4K system is \$16,000.

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| Conversational Languages   | Process Control   |
| * Communications Processor | Time Sharing      |

### HARDWARE

- |                                    |                           |
|------------------------------------|---------------------------|
| Word size: 24 bits                 | Removable Disk: 2.5-50 mc |
| Capacity: 4-32K core               | Fixed Head Disk: no       |
| Cycle Time: 2.0 usec               | MagTape: 10 kc (12.5 ips) |
| Add Time: 16 usec                  | 30 kc (37.5 ips)          |
| Instructions <sup>1</sup> : ABFM/D | Tape Cassettes: no        |
| Accumulators: 5                    | Paper Tape RD, PN: no, no |
| Index Registers: 3                 | Card RD, PN: yes, no      |
| Communications <sup>2</sup> : D/AB | Line Printer: 245-700 lpm |
| Transfer Rate: 380 kc              | Serial Printer: 30 cps    |
| CPU Features <sup>3</sup> : CIP/   | Display Terminal: yes     |
| Interface Slots: 8 chan.           | Multiplexor: asyn, syn    |

### SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| * Assembler 4K     | ALGOL                |
| Assembler, Macro   | APT                  |
| FORTRAN            |                      |
| BASIC, single user | * Disc Monitor 8K    |
| BASIC, multi-user  | Real Time Monitor    |
| * COBOL 16K        | Time Sharing Monitor |
| RPG                | Batch Monitor        |
| PLI                | Other:               |

#### <sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup>CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

FUJITSU 1

FUJITSU LIMITED  
6-1, Marunouchi 2-chome  
Chiyoda-ku, Tokyo Japan  
(03) 216-3211

Fujitsu manufactures and markets worldwide an extensive variety of electrical equipment, and large scale computers as well as minicomputers designed for general purpose use.

Established: 1935  
Revenue: \$619 M  
Net Earnings (loss): \$30.2 M  
Offices: Worldwide  
Sales: N/A

PRODUCTS include the FACOM MATE R, R-E and U-200 computers, plus the following peripheral devices: disks, magnetic tape transports and cassettes, line and serial printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, and FORTRAN compiler; real time and batch monitors

## FUJITSU FACOM MATE

A general-purpose computer used for batch processing.  
Introduced in 1972, cost of a 4K system is \$14,600.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| * Upward compatible      | Microprogrammable |
| * Field Service          | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | * Process Control |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                  |                             |
|----------------------------------|-----------------------------|
| Word size: 16 bits               | Removable Disk: no          |
| Capacity: 32K core               | Fixed Head Disk: no         |
| Cycle Time: 2.0                  | Mag Tape: no                |
| Add Time: 6 usec                 |                             |
| Instructions <sup>1</sup> : ABE  | Tape Cassettes: yes         |
| Accumulators: 1                  | Paper Tape RD, PN: yes, yes |
| Index Registers: 0               | Card RD, PN: no, no         |
| Communications <sup>2</sup> : /A | Line Printer: no            |
| Transfer Rate: 125 kc            | Serial Printer: no          |
| CPU Features <sup>3</sup> : FP   | Display Terminal: no        |
| Interface Slots: 8               | Multiplexor: no             |

## SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| * Assembler 4K     | ALGOL                |
| Assembler, Macro   | APT                  |
| * FORTRAN ?K       |                      |
| BASIC, single user | Disc Monitor         |
| BASIC, multi-user  | Real Time Monitor    |
| COBOL              | Time Sharing Monitor |
| RPG                | * Batch Monitor ?K   |
| PL1                | Other:               |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

FUJITSU 3

## FUJITSU FACOM R

A general-purpose, real-time computer designed for control applications. Introduced in 1969, cost of a 4K system is \$16,000.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- Conversational Languages
- Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 1-32K core  
Cycle Time: 1.5 usec  
Add Time: 6 usec  
Instructions<sup>1</sup>: A  
Accumulators: 1  
Index Registers: 0  
Communications<sup>2</sup>: /AD  
Transfer Rate: 800 kc  
CPU Features<sup>3</sup>: I/CF  
Interface Slots: ?

Removable Disk: 262 kc  
Fixed Head Disk: no  
Mag Tape: 196 kc (120 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 360-440 lpm  
Serial Printer: 20 cps  
Display Terminal: no  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN ?K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1

ALGOL  
APT  
Disc Monitor  
\* Real Time Monitor ?K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## FUJITSU FACON R-E

A general-purpose, real-time computer. Introduced in 1969, cost of a 4K system is available on request.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| * Upward compatible      | Microprogrammable |
| * Field Service          | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | * Process Control |
| Communications Processor | Time Sharing      |

## HARDWARE

Word size: 16 bits	Removable Disk: 262 kc
Capacity: 4-32K core	Fixed Head Disk: no
Cycle Time: 1.5 usec	Mag Tape: 196 kc (120 ips)
Add Time: 6 usec	
Instructions <sup>1</sup> : AB/M	Tape Cassettes: yes
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 3	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/A	Line Printer: 360-440 lpm
Transfer Rate: 500 kc	Serial Printer: no
CPU Features <sup>3</sup> : IP/CF	Display Terminal: no
Interface Slots: ?	Multiplexor: asyn, syn, A-D

## SOFTWARE

- |                    |                        |
|--------------------|------------------------|
| * Assembler 4K     | ALGOL                  |
| Assembler, Macro   | APT                    |
| * FORTRAN ?K       |                        |
| BASIC, single user | Disc Monitor           |
| BASIC, multi-user  | * Real Time Monitor ?K |
| COBOL              | Time Sharing Monitor   |
| RPG                | Batch Monitor          |
| PL1                | Other:                 |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

FUJITSU 5

## FUJITSU FACON U-200

A general-purpose, real-time computer. Introduced in 1972, cost of a 4K system is \$8,000.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- Conversational Languages
- Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: .65 usec  
Add Time: 1.58 usec  
Instructions<sup>1</sup>: AB/M  
Accumulators: 8  
Index Registers: 7  
Communications<sup>2</sup>: D/A  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: FIP/CM  
Interface Slots: ?

Removable Disk: 262 kc  
Fixed Head Disk: no  
Mag Tape: 10 kc (12.5 ips)  
60 kc (75 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 360-440 lpm  
Serial Printer: no  
Display Terminal: no  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro ?K
- \* FORTRAN ?K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1

ALGOL  
APT  
Disc Monitor  
\* Real Time Monitor ?K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GENERAL AUTO 1

## COMPANY PROFILE

GENERAL AUTOMATION INCORPORATED  
1055 South East Street  
Anaheim, California 92805 USA  
(714) 778-4800

General Automation manufactures and markets several families of computers, designed and supported for industrial automation, laboratory control, and measurement.

Established:	1967	
Revenues:	\$16.0 M	
Net Earnings (loss):	\$1.57 M	(7/72)
Offices:	Worldwide	
Sales:	Over 3100 computer systems	

PRODUCTS available include the SPC-12 series, SPC-16 series, and 18/30 computers, plus the following peripheral devices: disks, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, Process Control Language, BASIC and FORTRAN IV compilers; disk, real-time, and batch monitors; applications packages and a math library.

## GENERAL AUTOMATION SPC-12/10

The 12/10 is the lowest member of the 12 series, used in automation control. Introduced in 1968, cost of a 4K system is \$2,980.

## FEATURES

- |                                       |                   |
|---------------------------------------|-------------------|
| * Upward compatible                   | Microprogrammable |
| * Field Service                       | Virtual Memory    |
| Applications Software                 | Multiprocessor    |
| Conversational Languages <sup>1</sup> | * Process Control |
| Communications Processor              | Time Sharing      |

## HARDWARE

- |                                    |                              |
|------------------------------------|------------------------------|
| Word size: 8 bits                  | Removable Disk:              |
| Capacity: 4-16K core               | Fixed Head Disk:             |
| Cycle Time: 2.16 usec              | Mag Tape: Peripherals on RPQ |
| Add Time: 6.48 usec                | basis                        |
| Instructions <sup>1</sup> : ABE    | Tape Cassettes:              |
| Accumulators: 4                    | Paper Tape RD, PN:           |
| Index Registers: 3                 | Card RD, PN:                 |
| Communications <sup>2</sup> : /ADT | Line Printer:                |
| Transfer Rate: 460 kc              | Serial Printer:              |
| CPU Features <sup>3</sup> : I/CFM  | Display Terminal:            |
| Interface Slots: bus               | Multiplexor: A-D             |

## SOFTWARE

- |                    |                        |
|--------------------|------------------------|
| * Assembler 4K     | ALGOL                  |
| Assembler, Macro   | APT                    |
| FORTRAN            |                        |
| BASIC, single user | Disc Monitor           |
| BASIC, multi-user  | * Real Time Monitor 8K |
| COBOL              | Time Sharing Monitor   |
| RPG                | Batch Monitor          |
| PL1                | Other:                 |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GENERAL AUTO 3

## GENERAL AUTOMATION SFC-12/15

The 12/15 is the middle member of the 12 series of automation control computers. Cost of a 4K system is \$3,480.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 8 bits
- Capacity: 4-8K core
- Cycle Time: 2.16 usec
- Add Time: 6.48 usec
- Instructions<sup>1</sup>: ABE
- Accumulators: 4
- Index Registers: 3
- Communications<sup>2</sup>: /ADT
- Transfer Rate: 920 kc
- CPU Features<sup>3</sup>: I/CFM
- Interface Slots: 7
- Removable Disk:
- Fixed Head Disk:
- Mag Tape: Peripherals on RPQ basis
- Tape Cassettes:
- Paper Tape RD, PN:
- Card RD, PN:
- Line Printer:
- Serial Printer:
- Display Terminal:
- Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- FORTRAN
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- Disc Monitor
- \* Real Time Monitor 8K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## GENERAL AUTOMATION SPC-12/20

The 12/20 is the top of the 12 series of automation control computers. Cost of a 4K system is \$3,980.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| Upward compatible        | Microprogrammable |
| * Field Service          | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | * Process Control |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                    |                       |
|------------------------------------|-----------------------|
| Word size: 8                       | Removable Disk:       |
| Capacity: 4-16K core               | Fixed Head Disk:      |
| Cycle Time: 2.16 usec              | Mag Tape: Peripherals |
| Add Time: 6.48 usec                | on RPQ basis          |
| Instructions <sup>1</sup> : ABE    | Tape Cassettes:       |
| Accumulators: 4                    | Paper Tape RD, PN:    |
| Index Registers: 3                 | Card RD, PN:          |
| Communications <sup>2</sup> : /ADT | Line Printer:         |
| Transfer Rate: 920 kc              | Serial Printer:       |
| CPU Features <sup>3</sup> : I/CFM  | Display Terminal:     |
| Interface Slots: 19                | Multiplexor: A-D      |

## SOFTWARE

- |                    |                        |
|--------------------|------------------------|
| * Assembler 4K     | ALGOL                  |
| Assembler, Macro   | APT                    |
| FORTRAN            |                        |
| BASIC, single user | Disc Monitor           |
| BASIC, multi-user  | * Real Time Monitor 8K |
| COBOL              | Time Sharing Monitor   |
| RPG                | Batch Monitor          |
| PL1                | Other:                 |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GENERAL AUTO 5

## GENERAL AUTOMATION SPC-16/40

A packaged SPC-16 series computer for end-user industrial control. Introduced in 1970, cost of a 4K system is \$5,550.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16  
Capacity: 4-16K core  
Cycle Time: 1.44 usec  
Add Time: 2.88 usec  
Instructions<sup>1</sup>: ABE/M  
Accumulators: 6/12  
Index Registers: 4/8  
Communications<sup>2</sup>: DM/ABST  
Transfer Rate: 1.4 mc  
CPU Features<sup>3</sup>: BCFI  
Interface Slots: 8

Removable Disk: .5-20 mc  
Fixed Head Disk: no  
Mag Tape: 20 kc (25 ips)  
60 kc (75 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 110-600 lpm  
Serial Printer: 15 cps  
Display Terminal: no  
Multiplexor: asyn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 8K
- COBOL
- RPG
- PL1

- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor ?K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## GENERAL AUTOMATION SPC-16/45

A flexible SPC-16 series processor for OEM applications in industrial control. Cost of a 4K system is \$3,950.

## FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

Word size: 16	Removable Disk: .5-20 mc
Capacity: 4-64K core	Fixed Head Disk: no
Cycle Time: 1.44 usec	Mag Tape: 20 kc (25 ips)
Add Time: 2.88 usec	60 kc (75 ips)
Instructions <sup>1</sup> : ABE/M	Tape Cassettes: no
Accumulators: 6/12	Paper Tape RD, PN: yes, yes
Index Registers: 4/8	Card RD, PN: yes, yes
Communications <sup>2</sup> : DM/ABST	Line Printer: 110-600 lpm
Transfer Rate: 1.4 mc	Serial Printer: 15 cps
CPU Features <sup>3</sup> : BCFI	Display Terminal: no
Interface Slots: bus	Multiplexor: A-D, asyn

## SOFTWARE

- |                         |                       |
|-------------------------|-----------------------|
| * Assembler 4K          | ALGOL                 |
| * Assembler, Macro 8K   | APT                   |
| * FORTRAN 8K            |                       |
| * BASIC, single user 4K | * Disc Monitor 8K     |
| * BASIC, multi-user 4K  | * Real Time Monitor ? |
| COBOL                   | Time Sharing Monitor  |
| RPG                     | * Batch Monitor 8K    |
| PL1                     | Other:                |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GENERAL AUTO 7

## GENERAL AUTOMATION SPC-16/60

A middle member of the 16 series computers, packaged for end-users. Cost of a 4K system is \$6,550.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16
- Capacity: 4-16K core
- Cycle Time: .96 usec
- Add Time: 1.92 usec
- Instructions: ABE/M
- Accumulators: 6/12
- Index Registers: 4/8
- Communications?: DM/ABST
- Transfer Rate: 2.0 mc
- CPU Features?: BCFI
- Interface Slots: 8
- Removable Disk: .5-20 mc
- Fixed Head Disk: no
- Mag Tape: 20 kc (25 ips)
- 60 kc (75 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 110-600 lpm
- Serial Printer: 15 cps
- Display Terminal: no
- Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 8K
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor ?K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## GENERAL AUTOMATION SPC-16/65

A middle of the 16 series line, for OEM industrial applications. Cost of a 4K system is \$4,950.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| Communications Processor   | Time Sharing      |

## HARDWARE

- |                                       |                             |
|---------------------------------------|-----------------------------|
| Word size: 16                         | Removable Disk: .5-20 mc    |
| Capacity: 4-65K core                  | Fixed Head Disk: no         |
| Cycle Time: .96 usec                  | Mag Tape: 20 kc (25 ips)    |
| Add Time: 1.92 usec                   | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : ABE/M     | Tape Cassettes: no          |
| Accumulators: 6/12                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 4/8                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : DM/ABST | Line Printer: 110-600 lpm   |
| Transfer Rate: 2.0 mc                 | Serial Printer: 15 cps      |
| CPU Features <sup>3</sup> : BCFI      | Display Terminal: no        |
| Interface Slots: bus                  | Multiplexor: A-D            |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | ALGOL                  |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 8K            |                        |
| * BASIC, single user 4K | * Disc Monitor 8K      |
| * BASIC, multi-user 8K  | * Real Time Monitor 7K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 8K     |
| PLI                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GENERAL AUTO 9

## GENERAL AUTOMATION SPC-16/80

The top of the 16 series line, packaged for end user industrial applications. Cost of a 4K system is \$8,550.

### FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16  
Capacity: 4-16K core  
Cycle Time: .8 usec  
Add Time: 1.6 usec  
Instructions<sup>1</sup>: ABE/M  
Accumulators: 6/12  
Index Registers: 4/8  
Communications<sup>2</sup>: DB/ABST  
Transfer Rate: 2.5 mc  
CPU Features<sup>3</sup>: BCFI  
Interface Slots: 8

Removable Disk: .5-20 mc  
Fixed Head Disk: no  
Mag Tape: 20 kc (25 ips)  
60 kc (75 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 110-600 lpm  
Serial Printer: 15 cps  
Display Terminal: no  
Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K
- \* BASIC, single user 4K
- \* BASIC, multi-user 8K
- COBOL
- RPG
- PL1

- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor ?K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bistynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## GENERAL AUTOMATION SPC-16/85

The top of the 16 series line, for OEM industrial applications. Cost of a 4K system is \$6,950.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| Upward compatible         | Microprogrammable |
| *Field Service            | Virtual Memory    |
| *Applications Software    | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| *Communications Processor | Time Sharing      |

## HARDWARE

- |                                       |                             |
|---------------------------------------|-----------------------------|
| Word size: 16                         | Removable Disk: .5-20 mc    |
| Capacity: 4-65K core                  | Fixed Head Disk: no         |
| Cycle Time: .8 usec                   | Mag Tape: 20 kc (25 ips)    |
| Add Time: 1.6 usec                    | 60 kc (75 ips)              |
| Instructions <sup>1</sup> : ABE/M     | Tape Cassettes: no          |
| Accumulators: 6/12                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 4/8                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : DM/ABST | Line Printer: 110-600 lpm   |
| Transfer Rate: 2.5 mc                 | Serial Printer: 15 cps      |
| CPU Features <sup>3</sup> : BCFI      | Display Terminal: no        |
| Interface Slots: bus                  | Multiplexor: A-D            |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | ALGOL                  |
| * Assembler, Macro 8K   | APT                    |
| * FORTRAN 8K            |                        |
| * BASIC, single user 4K | * Disc Monitor 8K      |
| * BASIC, multi-user 8K  | * Real Time Monitor ?K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | * Batch Monitor 8K     |
| PLI                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## GENERAL AUTOMATION 18/30

An IBM 1800 or 1130 replacement used in industrial automation applications. Introduced in 1969, over 300 have been sold. Cost of a 4K system is \$21,500.

### FEATURES

Upward compatible  
 \* Field Service  
 \* Applications Software  
 Conversational Languages  
 Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \* Process Control  
 Time Sharing

### HARDWARE

Word size: 16  
 Capacity: 4-32K core  
 Cycle Time: .96 usec  
 Add Time: 2.4 usec  
 Instructions<sup>1</sup>: AEM  
 Accumulators: 2  
 Index Registers: 3  
 Communications<sup>2</sup>: D/AT  
 Transfer Rate: 1.66 mc  
 CPU Features<sup>3</sup>: CFIMP  
 Interface Slots:

Removable Disk: 2.6-26 mc  
 Fixed Head Disk: .25-.5 mc  
 Mag Tape: 20 kc (25 ips)  
 60 kc (75 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 110-600 lpm  
 Serial Printer: 15 cps  
 Display Terminal: no  
 Multiplexor: no

### SOFTWARE

\* Assembler 4K  
 Assembler, Macro  
 \* FORTRAN 8K  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PLI

ALGOL  
 \* APT 16K  
 \* Disc Monitor 8K  
 \* Real Time Monitor 4K, 16K  
 Time Sharing Monitor  
 \* Batch Monitor 8K  
 Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GRI 1

## COMPANY PROFILE

GRI COMPUTER CORPORATION  
320 Needham Street  
Newton, Massachusetts 02164 USA  
(617) 969-0800

GRI manufactures and markets general purpose computers used as processors in business computer systems.

Established:	1968	
Revenues:	\$1.5 m	
Net Earnings (loss):	(N/A)	(4/73)
Offices:	Worldwide	
Sales:	Over 250 computer systems	

PRODUCTS available include the 99/30 and 99/40 computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, and a real-time monitor.

## GRI-99/30

A general-purpose computer used primarily as a controller in packaged business computer systems. Introduced in 1972, cost of a 4K system is \$5,000.

## FEATURES

*Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	*Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: yes
Capacity: 4-32K core	Fixed Head Disk: .064-1 mc
Cycle Time: 1.76 usec	Mag Tape: yes
Add Time: 1.76 usec	Tape Cassettes: yes
Instructions <sup>1</sup> : A/BEFM	Paper Tape RD, PN: yes, yes
Accumulators: 10	Card RD, PN: yes, no
Index Registers: 1	Line Printer: 300 lpm
Communications <sup>2</sup> : D/AS	Serial Printer: no
Transfer Rate: 1.1 mc	Display Terminal: yes
CPU Features <sup>3</sup> : BI/CFM	Multiplexor: A-D
Interface Slots: 4	

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	*Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GRI 3

GRI-99/40

A general-purpose computer used primarily as a controller in packaged business computer systems. Introduced in 1972, cost of a 4K system is \$5,725.

## FEATURES

Upward compatible  
\* Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
Time Sharing

## HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: 1.76 usec  
Add Time: 1.76 usec  
Instructions<sup>1</sup>: AEFM/B  
Accumulators: 10  
Index Registers: 1  
Communications<sup>2</sup>: D/AC  
Transfer Rate: 1.1 mc  
CPU Features<sup>3</sup>: BI/CFM  
Interface Slots: 4

Removable Disk: yes  
Fixed Head Disk: .064-1 mc  
Mag Tape: yes

Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 300 lpm  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: A-D

## SOFTWARE

\* Assembler 4K  
Assembler, Macro  
FORTRAN  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PLI

ALGOL  
APT  
  
Disc Monitor  
\* Real Time Monitor ?K  
Time Sharing Monitor  
Batch Monitor  
Other:

### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

GTE 1

## COMPANY PROFILE

GTE INFORMATION SYSTEMS INCORPORATED  
Four Corporate Park Drive  
White Plains, New York 10604 USA  
(203) 357-3388

GTE manufactures and markets a broad line of communications equipment, as well as a general purpose computer designed for data communications processing.

Established: 1970  
Revenue: \$70.3 m  
Net Earnings (loss): \$227 k (12/72)  
Offices: Worldwide  
Sales: N/A

PRODUCTS available include the IS/1000 computer, plus the following peripheral devices: disks, drum, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, and FORTRAN compilers; a terminals control operating system; and applications packages.

## GTE IS/1000

A general purpose computer designed for data communications and control. Introduced in 1972, cost of a 4K system is \$5,700.

## FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
  - Conversational Languages
- \* Communications Processor

- Microprogrammable Virtual Memory
- \* Multiprocessor
  - Process Control
  - Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-65K core  
 Cycle Time: .75 usec  
 Add Time: 1.5 usec  
 Instructions<sup>1</sup>: AB/M  
 Accumulators: 16  
 Index Registers: 15  
 Communications<sup>2</sup>: DM/ABST  
 Transfer Rate: 2.2 mc  
 CPU Features<sup>3</sup>: FI/CP  
 Interface Slots: ?

Removable Disk: yes  
 Fixed Head Disk: .064-2 mc  
 Mag Tape: 30 kc (37.5 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 600 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn

## SOFTWARE

- \* Assembler ?K
- \* Assembler, Macro ?K
- \* FORTRAN ?K
  - BASIC, single user
  - BASIC, multi-user
  - COBOL
  - RPG
  - PL1

ALGOL  
 APT  
 Disc Monitor  
 Real Time Monitor  
 Time Sharing Monitor  
 Batch Monitor  
 \*Other: communications 24K

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HEWLETT PACKARD 1

## COMPANY PROFILE

HEWLETT-PACKARD  
1501 Page Mill Road  
Palo Alto, California 94304 USA  
(415) 493-1501

Hewlett Packard manufactures and markets a wide range of test and measuring instruments, plus a series of general-purpose, real-time computers used in laboratory and instrumentation measurement and control.

Established: 1936  
Revenue: \$479 m  
Net Earnings (loss): \$38.5 m (10/72)  
Offices: Worldwide  
Sales: Over 6000 computer systems

PRODUCTS include the 2100A and 2100S computers, plus the following peripheral devices: disks, magnetic tape, line and serial printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, FORTRAN II and IV, 16-32 user BASIC, and ALGOL compilers; real-time with batch processing and disk monitors; a math library and applications packages, including Fast Fourier Transform and medical instrumentation.

## HEWLETT-PACKARD 2100A

A general-purpose, real-time computer for instrumentation control and scientific processing. Introduced in 1971, over 500 have been sold. Cost of a 4K system is \$8,050.

## FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- \* Microprogrammable
- Virtual Memory
- Multiprocessor
- Process Control
- Time Sharing

## HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: .98 usec
- Add Time: 1.96 usec
- Instructions<sup>1</sup>: AEM/F
- Accumulators: 2
- Index Registers: 0
- Communications<sup>2</sup>: ABM/DT
- Transfer Rate: 2.0 mc
- CPU Features<sup>3</sup>: FMP/C
- Interface Slots: 14/45
- Removable Disk: 2.4-46 mc
- Fixed Head Disk: .5-2 mc
- MagTape: 20 kc (25 ips)
- 72 kc (45 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 200-600 lpm
- Serial Printer: 30 cps
- Display Terminal: no
- Multiplexor: asyn, syn

## SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 8K
- \* BASIC, multi-user 2K
- COBOL
- RPG
- PL1
- \* ALGOL 16K
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 16K
- Time Sharing Monitor
- Batch Monitor
- Other:

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HEWLETT PACKARD 3

## HEWLETT PACKARD 2100S

A general-purpose, real-time computer for instrumentation control and scientific processing. Introduced in 1973, cost of a 16K system is \$16,000.

### FEATURES

- Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor

- \* Microprogrammable
- Virtual Memory
- Multiprocessor
- Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: .98 usec  
Add Time: 1.96 usec  
Instructions<sup>1</sup>: AEFM/  
Accumulators: 2  
Index Registers: 0  
Communications<sup>2</sup>: ABDM/T  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: CFIMP/  
Interface Slots: 12/43

Removable Disk: 2.4-46 mc  
Fixed Head Disk: .5-2 mc  
Mag Tape: 20 kc (25 ips)  
72 kc (45 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 200-600 lpm  
Serial Printer: 30 cps  
Display Terminal: no  
Multiplexor: asyn, syn

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 8K
- \* BASIC, multi-user ?K
- COBOL
- RPG
- PL1

- \* ALGOL 16K  
APT
- \* Disc Monitor 8K
- \* Real Time Monitor 16K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HITACHI 1

## COMPANY PROFILE

HITACHI LIMITED  
New Marunouchi Bldg.  
5-1 Marunouchi 1-chome  
Chiyoda-Ku, Tokyo Japan

Hitachi manufactures and markets a wide variety of electrical equipment, large scale computers, and mini-computers designed for scientific and control processing.

Established:	1910
Revenue:	\$2,955 m
Net Earnings (loss):	\$79.3 m
Offices:	Worldwide
Sales:	N/A

PRODUCTS available include the HITAC 10-II computer, plus the following peripheral devices: disks, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an assembler, Macro Assembler, and FORTRAN compilers; disk and real time monitors.

## HITACHI HITAC 10-II

A general-purpose, real-time computer used in process control applications. Introduced in 1972, cost of a 4K system is \$8,000.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	*Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 4.5-10 mc
Capacity: 4-32K core	Fixed Head Disk: no
Cycle Time: .9 usec	Mag Tape: 40 kc (25 ips)
Add Time: 1.8 usec	
Instructions <sup>1</sup> : A/M	Tape Cassettes: ?
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/A	Line Printer: 100 lpm
Transfer Rate: 1.66 mc	Serial Printer: no
CPU Features <sup>3</sup> : IP/CFM	Display Terminal: no
Interface Slots: ?	Multiplexor: ?

## SOFTWARE

*Assembler 4K	ALGOL
*Assembler, Macro ?K	APT
*FORTRAN ?K	
BASIC, single user	*Disc Monitor ?K
BASIC, multi-user	*Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bimynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HOKUSHIN 1

## COMPANY PROFILE

HOKUSHIN ELECTRIC WORKS, LTD  
30-1 3-Chome Shimomarako  
Ohta-Ku Tokyo, Japan  
(03) 759-4141

Hokushin manufactures and markets a wide variety of process control equipment, and a minicomputer designed for and used in process control applications.

Established:	?
Revenue:	\$52.7 M
Net Earnings (loss):	N/A
Offices:	Japan
Sales:	N/A

PRODUCTS available include the HOC700 computer, plus the following peripheral devices: disks, paper tape and card equipment.

SOFTWARE support includes an Assembler and FORTRAN compilers; and a real-time monitor.

## HOKUSHIN HOC700

A general-purpose, real-time computer designed for process control. Introduced in 1970, cost of a 4K system is \$22,000.

## FEATURES

Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	* Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: no
Capacity: 4-16K core	Fixed Head Disk: 128 kc
Cycle Time: .66 usec	Mag Tape: no
Add Time: 1.3 usec	
Instructions <sup>1</sup> : A/M	Tape Cassettes: no
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : D/A	Line Printer: 245-356
Transfer Rate: 1.4 mc	Serial Printer: ?
CPU Features <sup>3</sup> : BCIMP	Display Terminal: ?
Interface Slots: ?	Multiplexor: ?

## SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
* FORTRAN ?K	
BASIC, single user	Disc Monitor
BASIC, multi-user	* Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HONEYWELL 1

## COMPANY PROFILE

HONEYWELL INFORMATION SYSTEMS  
200 Smith Street, MS 061  
Waltham, Massachusetts 02154 USA  
(617) 237-4100

Honeywell Information Systems, a subsidiary of Honeywell, manufactures and markets a broad line of computer systems and peripheral devices. The Minicomputers are available either as separate processors or in complete systems for specific applications.

Established:	1927	(Honeywell)
Revenue:	\$2,125 m	
Net Earnings (loss):	\$82.3 m	(12/72)
Offices:	World wide	
Sales:	Over 4000 minicomputer systems.	

PRODUCTS include the H316, H516, and H716 computers plus the following peripheral devices: disks, magnetic tape, serial and line printers, display and printing terminals, paper tape and card equipment.

SOFTWARE support includes Assemblers, a Macro Assembler, BASIC and FORTRAN IV compilers; disk and real-time with multiprogramming monitors; and applications packages.

## HONEYWELL H316

A general-purpose computer available in several packaged applications systems with extensive software support. Introduced in 1969, cost of a 4K system is \$8,400.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 1.5-15 mc   |
| Capacity: 4-32K core                 | Fixed Head Disk: .4 mc      |
| Cycle Time: 1.6 usec                 | Mag Tape: 22 kc (26 ips)    |
| Add Time: 3.2 usec                   | 64 kc (80 ips)              |
| Instructions <sup>1</sup> : AB/EPM   | Tape Cassettes: no          |
| Accumulators: 2                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 1                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : /ABDST | Line Printer: 300-950 lpm   |
| Transfer Rate: 626 kc                | Serial Printer: 250 cps     |
| CPU Features <sup>3</sup> : I/FCMP   | Display Terminal: yes       |
| Interface Slots: ?                   | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler ?K          | ALGOL                  |
| * Assembler, Macro ?K   | APT                    |
| * FORTRAN ?K            |                        |
| * BASIC, single user ?K | * Disc Monitor ?K      |
| BASIC, multi-user       | * Real Time Monitor ?K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | Batch Monitor          |
| PL1                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

HONEYWELL 3

## HONEYWELL H516

A general-purpose computer available in several packaged applications systems with extensive software support. Introduced in 1966, cost of a 4K system is \$23,800.

### FEATURES

- |                           |                   |
|---------------------------|-------------------|
| *Upward compatible        | Microprogrammable |
| *Field Service            | Virtual Memory    |
| *Applications Software    | Multiprocessor    |
| *Conversational Languages | *Process Control  |
| *Communications Processor | Time Sharing      |

### HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 1.5-15 mc   |
| Capacity: 4-32K core                 | Fixed Head Disk: .4 mc      |
| Cycle Time: .96 usec                 | Mag Tape: 22 kc (26 ips)    |
| Add Time: 1.92 usec                  | 64 kc (80 ips)              |
| Instructions <sup>1</sup> : AB/EFM   | Tape Cassettes: no          |
| Accumulators: 2                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 1                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : /ABDST | Line Printer: 300-950 lpm   |
| Transfer Rate: 2.08 mc               | Serial Printer: 250 cps     |
| CPU Features <sup>3</sup> : I/FCMP   | Display Terminal: yes       |
| Interface Slots: ?                   | Multiplexor: asyn, syn, A-D |

### SOFTWARE

- |                        |                       |
|------------------------|-----------------------|
| *Assembler ?K          | ALGOL                 |
| *Assembler, Macro ?K   | APT                   |
| *FORTRAN ?K            |                       |
| *BASIC, single user ?K | *Disc Monitor ?K      |
| BASIC, multi-user      | *Real Time Monitor ?K |
| COBOL                  | Time Sharing Monitor  |
| RPG                    | Batch Monitor         |
| PL1                    | Other:                |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## HONEYWELL 716

A general-purpose computer available in several packaged applications systems with extensive software support. Introduced in 1972, cost of a 4K system is \$12,265.

## FEATURES

Upward compatible  
 \*Field Service  
 \*Applications Software  
 \*Conversational Languages  
 \*Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \*Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-65K core  
 Cycle Time: .775 usec  
 Add Time: 1.55 usec  
 Instructions<sup>1</sup>: ABEMS/  
 Accumulators: 2  
 Index Registers: 2  
 Communications<sup>2</sup>: D/ABST  
 Transfer Rate: 2.0 mc  
 CPU Features<sup>3</sup>: CFI/MP  
 Interface Slots: ?

Removable Disk: 2.2-15 mc  
 Fixed Head Disk: .4 mc  
 MagTape: 22 kc (26 ips)  
 64 kc (80 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 200-1100 lpm  
 Serial Printer: 250 cps  
 Display Terminal: yes  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

\*Assembler 4K  
 \*Assembler, Macro 16K  
 \*FORTRAN 16K  
 \*BASIC, single user 4K  
 BASIC, multi-user  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 Disc Monitor  
 \*Real Time Monitor 16K  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

IBM 1

## COMPANY PROFILE

INTERNATIONAL BUSINESS MACHINES INCORPORATED  
Armonk, New York 10504  
(414) 765-1900

IBM manufactures and markets a broad line of computer systems and peripherals world wide, as well as a small computer designed for sensor-based applications.

Established: 1911

Revenues: \$9,536 m

Net Earnings (loss): \$1,279 m

Offices: World wide

Sales: Over 1500 System/7 computer systems.

PRODUCTS available include the System/7 computer, plus the following peripheral devices: disks and a number of devices available on special order.

SOFTWARE support includes a Macro Assembler, and applications software.

## IBM SYSTEM/7

A computer designed for sensor-based applications. Introduced in 1971, cost of a 4K system is \$18,600.

## FEATURES

Upward compatible  
\*Field Service  
\*Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\*Process Control  
Time Sharing

## HARDWARE

Word size: 16 bits  
Capacity: 2-16K core  
Cycle Time: .4 usec  
Add Time: .8 usec  
Instructions<sup>1</sup>: B  
Accumulators: 4  
Index Registers: 7  
Communications<sup>2</sup>: D/AB  
Transfer Rate: 1.0 mc  
CPU Features<sup>3</sup>: CIP/F  
Interface Slots: 11 chan

Removable Disk: 2.5-5 mc  
Fixed Head Disk: no  
Mag Tape: no

Tape Cassettes: RPQ  
Paper Tape RD, PN: RPQ  
Card RD, PN: RPQ  
Line Printer: no  
Serial Printer: RPQ  
Display Terminal:  
Multiplexor: asyn, syn, A-D

## SOFTWARE

Assembler  
\*Assembler, Macro ?K  
FORTRAN  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTEL I

## COMPANY PROFILE

INTEL CORPORATION  
3065 Bowers Avenue  
Santa Clara, California 95051  
(408) 246-7501

Intel manufactures and markets a series of microcomputer systems designed for general-purpose use.

Established: 1968

Revenue: \$23.4 m

Net Earnings (loss): \$3.08 m (12/72)

Offices: World wide

Sales: N/A

PRODUCTS include the, INTELLEC-4, and INTELLEC-8 computers.

SOFTWARE support includes an Assembler and a PL/1 (PLM) compiler.

## INTEL INTELLEC-4

A complete computer system based on the MCS-4 micro-computer. Introduced in 1973, cost of a 4K system is \$2,195.

## FEATURES

Upward compatible  
Field Service  
Applications Software  
Conversational Languages  
Communications Processor

\*Microprogrammable  
Virtual Memory  
Multiprocessor  
Process Control  
Time Sharing

## HARDWARE

Word size: 4 bits  
Capacity: 4-8K mos  
Cycle Time: .9 usec  
Add Time: 10.8 usec  
Instructions<sup>1</sup>: A  
Accumulators: 1  
Index Registers: 16  
Communications<sup>2</sup>: D/A  
Transfer Rate: 11.5 mc  
CPU Features<sup>3</sup>: M  
Interface Slots: 8

Removable Disk: no  
Fixed Head Disk: no  
Mag Tape: no  
  
Tape Cassettes: no  
Paper Tape RD, PN: no  
Card RD, PN: no  
Line Printer: no  
Serial Printer: TTY  
Display Terminal: no  
Multiplexor: no

## SOFTWARE

\*Assembler 5K  
Assembler, Macro  
FORTRAN  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
  
Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTEL 3

## INTEL INTELLEC-8

A complete general purpose computer based on the MCS-8 microcomputer, programmable in a subset of PL/1. Introduced in 1973, cost of a 4K system is \$2,395.

### FEATURES

Upward compatible  
Field Service  
Applications Software  
Conversational Languages  
Communications Processor

\*Microprogrammable  
Virtual Memory  
Multiprocessor  
Process Control  
Time Sharing

### HARDWARE

Word size: 8 bits  
Capacity: 4-16K mos  
Cycle Time: .9 usec  
Add Time: 12.5 usec  
Instructions: AB  
Accumulators: 1  
Index Registers: 6  
Communications?: D/A  
Transfer Rate: 12.5 kc  
CPU Features: M  
Interface Slots: 8

Removable Disk: no  
Fixed Head Disk: no  
Mag Tape: no  
  
Tape Cassettes: no  
Paper Tape RD, PN: no  
Card RD, PN: no  
Line Printer: no  
Serial Printer: TTY  
Display Terminal: no  
Multiplexor: no

### SOFTWARE

\*Assembler ?K  
Assembler, Macro  
FORTRAN  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
\*PL1 (PL/M) ?K

ALGOL  
APT  
  
Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTERDATA 1

## COMPANY PROFILE

INTERDATA INCORPORATED  
2 Crescent Place  
Oceanport, New Jersey 07757 USA  
(201) 229-4040

Interdata manufactures and markets general-purpose, real-time computers and communications processors, with fast processing times and high throughput.

Established: 1966  
Revenues: \$12.8 m  
Net Earnings (loss): \$894 k (12/72)  
Offices: Worldwide  
Sales: Over 1600 systems shipped to date

PRODUCTS available include the models 50 and 55 communications processors, the models 7/16, 7/32, 70, 74,80 and 85 computers and the following peripheral devices: disks, magnetic tape, transports and cassettes, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, BASIC, and FORTRAN IV and V compilers; a small I/O executive, disk, and real time with multiprogramming monitors.

## INTERDATA MODEL 50

A data communications processor with extensive data handling instructions. Introduced in 1972, cost of a 4K system is \$6,800.

## FEATURES

- |                                      |                   |
|--------------------------------------|-------------------|
| *Upward compatible                   | Microprogrammable |
| *Field Service Applications Software | Virtual Memory    |
| *Conversational Languages            | * Multiprocessor  |
| *Communications Processor            | Process Control   |
|                                      | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.5-10 mc   |
| Capacity: 4-32K core                 | Fixed Head Disk: no         |
| Cycle Time: 1.0 usec                 | Mag Tape: 36 kc (45 ips)    |
| Add Time: 3.25 usec                  | 72 kc (45 ips)              |
| Instructions <sup>1</sup> : B/M      | Tape Cassettes: yes         |
| Accumulators: 16                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 15                  | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : A/BDST | Line Printer: 200-600 lpm   |
| Transfer Rate: 2.0 mc                | Serial Printer: no          |
| CPU Features <sup>3</sup> : I/CFMP   | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                      |
|-------------------------|----------------------|
| * Assembler 4K          | ALGOL                |
| Assembler, Macro        | APT                  |
| * FORTRAN 8K, 12K       |                      |
| * BASIC, single user 8K | * Disc Monitor 8K    |
| BASIC, multi-user       | Real Time Monitor    |
| COBOL                   | Time Sharing Monitor |
| RPG                     | Batch Monitor        |
| PL1                     | Other:               |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTERDATA 3

## INTERDATA MODEL 70

A general-purpose, real-time computer with communications capabilities. Introduced in 1971, cost of a 4K system is \$6,800.

### FEATURES

- \* Upward compatible
- \* Field Service Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable Virtual Memory Multiprocessor
- \* Process Control Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: 1.0 usec  
Add Time: 3.25 usec  
Instructions<sup>1</sup>: BFM/  
Accumulators: 16  
Index Registers: 15  
Communications<sup>2</sup>: A/BDST  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: I/CFMP  
Interface Slots: bus

Removable Disk: 2.5-10 mc  
Fixed Head Disk: no  
Mag Tape: 36 kc (45 ips)  
72 kc (45 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 200-600 lpm  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro
- \* FORTRAN 8K, 12K
- \* BASIC, single user 8K  
BASIC, multi-user  
COBOL  
RPG  
PL1

- ALGOL  
APT
- \* Disc Monitor 12K
- \* Real Time Monitor 12K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## INTERDATA MODEL 74

A general-purpose, real-time computer for OEM markets. Introduced in 1973, cost of a 4K system is \$3,950.

## FEATURES

- \* Upward compatible
- \* Field Service Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-32K core  
 Cycle Time: 1.0 usec  
 Add Time: 3.25 usec  
 Instructions<sup>1</sup>: BM/  
 Accumulators: 16  
 Index Registers: 15  
 Communications<sup>2</sup>: /ABDST  
 Transfer Rate: 2.0 mc  
 CPU Features<sup>3</sup>: I/CFMP  
 Interface Slots: bus

Removable Disk: 2.5-10 mc  
 Fixed Head Disk: no  
 MagTape: 36 kc (45 ips)  
 72 kc (45 ips)  
 Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 200-600 lpm  
 Serial Printer: no  
 Display Terminal: yes  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

- \* Assembler 4K  
 Assembler, Macro
- \* FORTRAN 8K, 12K
- \* BASIC, single user 8K  
 BASIC, multi-user
- COBOL
- RPG
- PL1

- ALGOL
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTERDATA 5

## INTERDATA MODEL 80

A general-purpose, real-time computer with MOS memory. Introduced in 1972, cost of an 8K system is \$14,900.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor
- \* Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 8-32K mos  
Cycle Time: .24 usec  
Add Time: .9 usec  
Instructions<sup>1</sup>: BFMS/  
Accumulators: 16  
Index Registers: 15  
Communications<sup>2</sup>: M/ABDST  
Transfer Rate: 4.5 mc  
CPU Features<sup>3</sup>: I/CFMP  
Interface Slots: bus

Removable Disk: 2.5-10 mc  
Fixed Head Disk: no  
Mag Tape: 36 kc (45 ips)  
          72 kc (45 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 200-600 lpm  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 8K
- Assembler, Macro
- \* FORTRAN 8K, 12K
- \* BASIC, single user 8K
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## INTERDATA MODEL 85

A general-purpose, real-time computer that is user-microprogrammable. Introduced in 1973, cost of a 8K system is \$22,800.

## FEATURES

- |                            |                     |
|----------------------------|---------------------|
| * Upward compatible        | * Microprogrammable |
| * Field Service            | Virtual Memory      |
| Applications Software      | Multiprocessor      |
| * Conversational Languages | * Process Control   |
| * Communications Processor | Time Sharing        |

## HARDWARE

- |                                       |                             |
|---------------------------------------|-----------------------------|
| Word size: 16 bit                     | Removable Disk: 2.5-10 mc   |
| Capacity: 8-32K mos                   | Fixed Head Disk: no         |
| Cycle Time: .27 usec                  | MagTape: 36 kc (45 ips)     |
| Add Time: 1.01 usec                   | 72 kc (45 ips)              |
| Instructions <sup>1</sup> : BFM       | Tape Cassettes: yes         |
| Accumulators: 16                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 15                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : M/ABDST | Line Printer: 200-600 lpm   |
| Transfer Rate: 2.0 mc                 | Serial Printer: no          |
| CPU Features <sup>3</sup> : I/CFMP    | Display Terminal: yes       |
| Interface Slots: bus                  | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                         |
|-------------------------|-------------------------|
| * Assembler 8K          | ALGOL                   |
| Assembler, Macro        | APT                     |
| * FORTRAN 8K, 12K       |                         |
| * BASIC, single user 8K | * Disc Monitor 12K      |
| BASIC, multi-user       | * Real Time Monitor 12K |
| COBOL                   | Time Sharing Monitor    |
| RPG                     | Batch Monitor           |
| PLI                     | Other:                  |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

INTERDATA 7

## INTERDATA MODEL 7/16

The newest Interdata computer designed as a low cost OEM processor. With first delivery in 1974, cost of a 4K system is \$3,550.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: 1.0/.75 usec
- Add Time: ?
- Instructions<sup>1</sup>: BMS/F
- Accumulators: 16
- Index Registers: 15
- Communications<sup>2</sup>: /ABDST
- Transfer Rate: 2.0 mc
- CPU Features<sup>3</sup>: I/CFMP
- Interface Slots: 4
- Removable Disk: 2.5-10 mc
- Fixed Head Disk: no
- Mag Tape: 36 kc (45 ips)
- 72 kc (45 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 200-600 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 8K
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## INTERDATA MODEL 7/32

A new 32 bit general purpose computer designed for OEM uses. All INTERDATA Software is compatible. First delivery in 1974, cost of a 4K system is \$10,300.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 32 bits                   | Removable Disk: 2.5-10 mc   |
| Capacity: 8-256K core                | Fixed Head Disk: no         |
| Cycle Time: .75 usec                 | Mag Tape: 36 kc (45 ips)    |
| Add Time: 3.25                       | 72 kc (45 ips)              |
| Instructions <sup>1</sup> : BMS/F    | Tape Cassettes: yes         |
| Accumulators: 32                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 30                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : /ABDST | Line Printer: 200-600 lpm   |
| Transfer Rate: 2.6 mc                | Serial Printer: no          |
| CPU Features <sup>3</sup> : I/CDFMP  | Display Terminal: yes       |
| Interface Slots: bus                 | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 4K          | ALGOL                  |
| Assembler, Macro        | APT                    |
| * FORTRAN 8K            |                        |
| * BASIC, single user ?K | * Disc Monitor ?K      |
| BASIC, multi-user       | * Real Time Monitor ?K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | Batch Monitor          |
| PLI                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

LABEN 1

## COMPANY PROFILE

LABEN  
Via E. Bassini, 15  
Milano, Italy 20133  
23-65-551

Laben, a division of Montedel, manufactures and markets minicomputers for scientific processing and industrial process control

Established: ?

Revenues: ?

Net Earnings (loss): ?

Offices: World wide

PRODUCTS available include the Laben 70 and 701 processors, plus the following peripheral devices: disks, magnetic tape, line and serial printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, FORTRAN and BASIC compilers; disk and real time monitors; math library and scientific applications packages for signal processing and nuclear analysis.

## LABEN 70

A general-purpose computer designed for scientific and process control applications. Introduced in 1970, cost of a 4K system is \$12,220.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| * Conversational Languages | * Process Control |
| Communications Processor   | Time Sharing      |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 16 bits                 | Removable Disk: no          |
| Capacity: 4-32K core               | Fixed Head Disk: 400 kc     |
| Cycle Time: 1.35 usec              | Mag Tape: 30 kc (37.5 ips)  |
| Add Time: 2.7 usec                 |                             |
| Instructions <sup>1</sup> : AB     | Tape Cassettes: no          |
| Accumulators: 3                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                 | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : /AD  | Line Printer: 245-1100 lpm  |
| Transfer Rate: 1.4 mc              | Serial Printer: yes         |
| CPU Features <sup>3</sup> : IM/CFP | Display Terminal: yes       |
| Interface Slots: 32 chan           | Multiplexor: A-D            |

## SOFTWARE

- |                             |                        |
|-----------------------------|------------------------|
| * Assembler 4K              | ALGOL                  |
| * Assembler, Macro 4K       | APT                    |
| * FORTRAN 8K                |                        |
| * BASIC, single user 4K, 8K | * Disc Monitor ?K      |
| * BASIC, multi-user ?K      | * Real Time Monitor 4K |
| COBOL                       | Time Sharing Monitor   |
| RPG                         | Batch Monitor          |
| PLI                         | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

LABEN 3

## LABEN 701

A general-purpose computer for scientific, process control, and remote terminal applications. Introduced in 1972, cost of a 4K system is \$9,400.

### FEATURES

Upward compatible  
\* Field Service  
\* Applications Software  
\* Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: 1.35 usec  
Add Time: 2.7 usec  
Instructions<sup>1</sup>: AB  
Accumulators: 3  
Index Registers: 2  
Communications<sup>2</sup>: /AD  
Transfer Rate: 1/4 mc  
CPU Features<sup>3</sup>: IM/CFP  
Interface Slots: 6 chan

Removable Disk: no  
Fixed Head Disk: 400 kc  
Mag Tape: 10 kc (12.5 ips)  
60 kc (75 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 356-1100 lpm  
Serial Printer: yes  
Display Terminal: yes  
Multiplexor: A-D

### SOFTWARE

\* Assembler 4K  
\* Assembler, Macro 4K  
\* FORTRAN 8K  
\* BASIC, single user 4K  
\* BASIC, multi-user ?K  
COBOL  
RPG  
PL1

ALGOL  
APT  
\* Disc Monitor ?K  
\* Real Time Monitor 4K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

LINOLEX 1

## COMPANY PROFILE

LINOLEX SYSTEMS INCORPORATED  
5 Esquire Road  
North Billerica, Massachusetts 01862  
(617) 667-4151

Linolex manufactures and markets a business data processing computer which includes an integral display, keyboard, and magnetic tape cassettes.

Established: 1971

Revenue: ?

Net Earnings (loss) : ?

Offices: U.S.

Sales: Over 50 business computer systems.

PRODUCTS available include the Model A Computer plus the following peripheral devices: disks, magnetic tape cassettes and transports, display terminals, paper tape and card equipment.

SOFTWARE support includes a Macro Assembler, BASIC and DEGEN compilers; a disk monitor; and business applications packages.

## LINOLEX MODEL A

A general purpose computer for business data processing. Introduced in 1972, cost of a 4K system including display and three tape cassettes is \$9,900.

## FEATURES

Upward compatible  
Field Service  
\*Applications Software  
\*Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
Process Control  
Time Sharing

## HARDWARE

Word size: 8 bits  
Capacity: 4-32 MOS  
Cycle Time: 1.2 usec  
Add Time: 30 usec  
Instructions<sup>1</sup>: ABDEM/  
Accumulators: 0  
Index Registers: 0  
Communications<sup>2</sup>: /ABS  
Transfer Rate: 20 kc  
CPU Features<sup>3</sup>: CI/F  
Interface Slots: 16 channels

Removable Disk: 4.5 mc  
Fixed Head Disk: no  
MagTape: 10 kc (12.5 ips)

Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: no  
Serial Printer: 30-165 cps  
Display Terminal: yes  
Multiplexor: no

## SOFTWARE

\* Assembler 4K  
\* Assembler, Macro 4K  
FORTRAN  
\* BASIC, single user ?K  
BASIC, multi-user  
COBOL  
RPG  
PLI

ALGOL  
APT

\* Disc Monitor ?K  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

LOCKHEED 1

## COMPANY PROFILE

LOCKHEED ELECTRONICS COMPANY INCORPORATED  
Data Products Division  
6201 East Randolph Street  
Los Angeles, California 90040 USA  
(213) 722-6810

Lockheed Electronics, a subsidiary of Lockheed Aircraft, manufactures and markets a series of general-purpose minicomputers used in control and communications environments.

Established:	1959
Revenue:	N/A
Net Earnings (loss):	N/A
Offices:	Worldwide
Sales:	Over 1800 computer systems

PRODUCTS available include the Mac 16, Mac Jr., and SUE computers, plus the following peripheral devices: disks, magnetic tape cartridges and transports, serial and line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes Assemblers, Macro Assemblers, FORTRAN IV and RPG II compilers; disk, real-time and communications monitors.

## LOCKHEED MAC 16

A general-purpose, real-time computer used in control and communications applications. Introduced in 1969, cost of a 4K system is \$9,800.

## FEATURES

Upward compatible  
 \*Field Service  
 \*Applications Software  
 Conversational Languages  
 \*Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-65K core  
 Cycle Time: 1.0 usec  
 Add Time: 2.0 usec  
 Instructions<sup>1</sup>: AB/M  
 Accumulators: 1  
 Index Registers: 4  
 Communications<sup>2</sup>: D/ABST  
 Transfer Rate: 1.6 mc  
 CPU Features<sup>3</sup>: CPI/MP  
 Interface Slots: 30

Removable Disk: 5 mc  
 Fixed Head Disk: .064-1 mc  
 Mag Tape: 20 kc (25 ips)

Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 135-300 lpm  
 Serial Printer: no  
 Display Terminal: yes  
 Multiplexor: asyn, syn

## SOFTWARE

\* Assembler 4K  
 \* Assembler, Macro 4K  
 \* FORTRAN 8K  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PLI

ALGOL  
 APT  
 Disc Monitor  
 \* Real Time Monitor ?K  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

LOCKHEED 3

## LOCKHEED MAC JR.

A general-purpose, real-time computer used in control and communications applications. Introduced in 1971, cost of a 4K system is \$6,500.

### FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| Conversational Languages   | Process Control   |
| * Communications Processor | Time Sharing      |

### HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 5.0 mc      |
| Capacity: 4-65K core                 | Fixed Head Disk: .07-1 mc   |
| Cycle Time: 1.0 usec                 | MagTape: 20 kc (25 ips)     |
| Add Time: 2.0 usec                   |                             |
| Instructions <sup>1</sup> : AB/M     | Tape Cassettes: yes         |
| Accumulators: 1                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 4                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 135-300 lpm   |
| Transfer Rate: 1.6 mc                | Serial Printer: no          |
| CPU Features <sup>3</sup> : CFI/MP   | Display Terminal: yes       |
| Interface Slots: 30                  | Multiplexor: asyn, syn      |

### SOFTWARE

- |                       |                        |
|-----------------------|------------------------|
| * Assembler 4K        | ALGOL                  |
| * Assembler, Macro 4K | APT                    |
| * FORTRAN 8K          |                        |
| BASIC, single user    | Disc Monitor           |
| BASIC, multi-user     | * Real Time Monitor ?K |
| COBOL                 | Time Sharing Monitor   |
| RPG                   | Batch Monitor          |
| PL1                   | Other:                 |

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## LOCKHEED SUE

A general-purpose, real-time computer with high modularity for specific applications. Introduced in 1972, cost of a 4K system is \$5,080.

## FEATURES

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>Upward compatible</li> <li>* Field Service</li> <li>* Applications Software               <ul style="list-style-type: none"> <li>Conversational Languages</li> <li>Communications Processor</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>* Microprogrammable Virtual Memory</li> <li>* Multiprocessor               <ul style="list-style-type: none"> <li>Process Control</li> <li>Time Sharing</li> </ul> </li> </ul> |
|---|---|

## HARDWARE

Word size: 16 bits	Removable Disk: 5.0 mc
Capacity: 4-32K core	Fixed Head Disk: no
Cycle Time: .85/.2 usec	MagTape: 10 kc (12.5 ips)
Add Time: 2.79 usec	60 kc (75 ips)
Instructions <sup>1</sup> : AB/DMS	Tape Cassettes: yes
Accumulators: 7	Paper Tape RD, PN: yes, yes
Index Registers: 7	Card RD, PN: yes, yes
Communications <sup>2</sup> : DM/AS	Line Printer: 200-600 lpm
Transfer Rate: 10.0 mc	Serial Printer: 100 cps
CPU Features <sup>3</sup> : I/CFMP	Display Terminal: yes
Interface Slots: bus	Multiplexor: no

## SOFTWARE

* Assembler 4K	ALGOL
* Assembler, Macro 8K	APT
FORTRAN	
BASIC, single user	* Disc Monitor 12K
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
* RPG 12K	Batch Monitor
PL1	Other: communications

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MATSUSHITA 1

## COMPANY PROFILE

MATSUSHITA ELECTRIC INDUSTRIAL COMPANY, LTD.  
1006, Kadoma  
Kadoma-City, Osaka Japan  
(06) 908-1121

Matsushita, known as National throughout the world and as Panasonic in the US and Canada, manufactures and markets an extensive variety of electrical and electronic equipment, including minicomputers designed for OEM use.

Established:	1918	
Revenues:	\$2,827 m	
Net Earnings (loss):	\$154.8 m	(5/72)
Offices:	Worldwide	
Sales:	N/A	

PRODUCTS include the MC 7/F and 7/S computers, plus the following peripheral devices: mini-disks, drums, magnetic tape, display terminals and paper tape equipment.

SOFTWARE support includes an Assembler, Macro Assembler, mini-FORTRAN, FORTRAN IV, and conversational FORTRAN compilers; and a math library.

## PANASONIC MC 7/F

A general-purpose computer for OEM and special systems design use. Introduced in 1970, cost of a 4K system is available on request.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | Multiprocessor    |
| * Conversational Languages | * Process Control |
| Communications Processor   | Time Sharing      |

## HARDWARE

- |                                   |                             |
|-----------------------------------|-----------------------------|
| Word size: 16 bits                | Removable Disk: 20-80 kc    |
| Capacity: 4-16K core              | Fixed Head Disk: 128 kc     |
| Cycle Time: .6 usec               | MagTape: 10 kc (12.5 ips)   |
| Add Time: 1.2 usec                |                             |
| Instructions <sup>1</sup> : A     | Tape Cassettes: no          |
| Accumulators: 1                   | Paper Tape RD, PN: yes, yes |
| Index Registers: 3                | Card RD, PN: no, no         |
| Communications <sup>2</sup> : D/A | Line Printer: no            |
| Transfer Rate: 800 kc             | Serial Printer: no          |
| CPU Features <sup>3</sup> : FIMP/ | Display Terminal: yes       |
| Interface Slots: 5                | Multiplexor: ?              |

## SOFTWARE

- |                       |                      |
|-----------------------|----------------------|
| * Assembler 4K        | ALGOL                |
| * Assembler, Macro 4K | APT                  |
| * FORTRAN 4K, 8K      |                      |
| BASIC, single user    | Disc Monitor         |
| BASIC, multi-user     | Real Time Monitor    |
| COBOL                 | Time Sharing Monitor |
| RPG                   | Batch Monitor        |
| PL1                   | Other:               |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## PANASONIC MC 7/S

A general-purpose computer designed for OEM and specialized systems. Introduced in 1971, cost of a 4K system is available on request.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 1-16K core
- Cycle Time: 4.0 usec
- Add Time: 24 usec
- Instructions<sup>1</sup>: A
- Accumulators: 1
- Index Registers: 3
- Communications<sup>2</sup>: /AD
- Transfer Rate: 120 kc
- CPU Features<sup>3</sup>: P/FIM
- Interface Slots: 1/5
- Removable Disk: 20-80 kc
- Fixed Head Disk: 128 kc
- Mag Tape: 10 kc (12.5 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: no, no
- Line Printer: no
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: ?

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 4K
- \* FORTRAN 4K, 8K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- Disc Monitor
- Real Time Monitor
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MICRODATA 1

## COMPANY PROFILE

MICRODATA CORPORATION  
17481 Red Hill Avenue  
Irvine, California 72705 USA  
(714) 540-6730

Microdata manufactures and markets several families of microprogrammable computers as well as peripheral devices. Applications areas include efficient high-level language processing and educational use.

Established: 1967

Revenue: \$6.24 m

Net Earnings (loss): \$676 K (8/72)

Offices: USA, Europe, and Far East

Sales: Over 3000 computer systems

PRODUCTS include the Micro 400/10, 1600, 1600/21, 1600/30, 1600/40, 1600/60, 3200, 3230, and 32/S computers, as well as the following peripheral devices: disks, magnetic tape cassettes and transports, line printer, paper tape and card equipment.

SOFTWARE support includes an Assembler and Macro Assembler (microprogrammed in some systems), 1-32 user BASIC, FORTRAN, and MPL compilers; and a disk operating system.

## MICRODATA 400/10

A general purpose computer for OEM use as a programmable controller. Introduced in 1971, cost of a 4K system is \$3,450.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 8 bits	Removable Disk: yes
Capacity: 1-65K core	Fixed Head Disk: no
Cycle Time: 1.6 usec	MagTape: 20 kc (25 ips)
Add Time: 1.6 usec	
Instructions <sup>1</sup> : B	Tape Cassettes: no
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, no
Communications <sup>2</sup> : D/A	Line Printer: 245 lpm
Transfer Rate: 625 kc	Serial Printer: no
CPU Features <sup>3</sup> : CFI/B	Display Terminal: yes
Interface Slots: bus	Multiplexor: no

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MICRODATA 3

## MICRODATA 1600

A general purpose computer microprogrammable for virtually any application. Introduced in 1971, cost of a 4K system is \$4,475.

### FEATURES

- \* Upward compatible
- \* Field Service
  - Applications Software
  - Conversational Languages
- \* Communications Processor
- \* Microprogrammable Virtual Memory
- \* Multiprocessor
  - Process Control
  - Time Sharing

### HARDWARE

- Word size: 8 bits
- Capacity: 4-65K core
- Cycle Time: 1.0 usec
- Add Time: 2.0 usec
- Instructions<sup>1</sup>: /ABDEMSEF
- Accumulators: 30
- Index Registers: 30
- Communications<sup>2</sup>: D/ABST
- Transfer Rate: 1.0 mc
- CPU Features<sup>3</sup>: CFI/
- Interface Slots: 10
- Removable Disk: 2.5-5 mc
- Fixed Head Disk: no
- MagTape: 10 kc (12.5 ips)  
20 kc (25 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 250 lpm
- Serial Printer: no
- Display Terminal: no
- Multiplexor: asyn, syn

### SOFTWARE

- \* Assembler 4K
  - Assembler, Macro
  - FORTRAN
  - BASIC, single user
  - BASIC, multi-user
  - COBOL
  - RPG
  - PL1
- ALGOL
- APT
- Disc Monitor
- Real Time Monitor
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MICRODATA 1600/21

A general purpose computer based on the 1600 processor.  
Introduced in 1972, cost of a 4K system is \$5,025.

## FEATURES

* Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
* Communications Processor	Time Sharing

## HARDWARE

Word size: 8 bits	Removable Disk: 2.5-5 mc
Capacity: 4-32K core	Fixed Head Disk: no
Cycle Time: 1.0 usec	Mag Tape: 10 kc (12.5 ips)
Add Time: 2.0 usec	20 kc (25 ips)
Instructions <sup>1</sup> : ABDEMS/F	Tape Cassettes: yes
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : /ABDST	Line Printer: 250 lpm
Transfer Rate: 1.0 mc	Serail Printer: no
CPU Features <sup>3</sup> : CFI/	Display Terminal: no
Interface Slots: 9	Multiplexor: asyn, syn

## SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MICRODATA 1600/30

A microprogrammable general purpose computer based on the 1600 processor. Introduced in 1973, cost of a 4K system is \$6,075.

### FEATURES

- \* Upward compatible
- \* Field Service Applications Software
- \* Conversational Languages
- \* Communications Processor

- \* Microprogrammable Virtual Memory
- \* Multiprocessor Process Control
- Time Sharing

### HARDWARE

Word size: 8 bits  
Capacity: 4-65K core  
Cycle Time: 1.0 usec  
Add Time: 2.0 usec  
Instructions<sup>1</sup>: ABDEMS/F  
Accumulators: 2  
Index Registers: 1  
Communications<sup>2</sup>: /DABST  
Transfer Rate: 1.0 mc  
CPU Features<sup>3</sup>: CFI/  
Interface Slots: 9

Removable Disk: 2.5-5 mc  
Fixed Head Disk: no  
Mag Tape: 10 kc (12.5 ips)  
20 kc (25 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 250 lpm  
Serial Printer: no  
Display Terminal: no  
Multiplexor: asyn, syn

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro  
FORTRAN
- \* BASIC, single user 4K  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT

Disc Monitor  
Real Time Monitor  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MICRODATA 1600/40

A general purpose computer designed at servicing a 1-32 user interactive BASIC system in educational environments. Introduced in 1972, cost of an 8K system is \$6,900.

## FEATURES

Upward compatible  
 \*Field Service  
 Applications Software  
 \*Conversational Languages  
 \*Communications Processor

\* Microprogrammable  
 Virtual Memory  
 \* Multiprocessor  
 Process Control  
 Time Sharing

## HARDWARE

Word size: 8 bits  
 Capacity: 8-65K core  
 Cycle Time: 1.0 usec  
 Add Time: 2.0 usec  
 Instructions<sup>1</sup>: ABDEMS/  
 Accumulators: 2  
 Index Registers: 1  
 Communications<sup>2</sup>: /DABST  
 Transfer Rate: 1.0 mc  
 CPU Features<sup>3</sup>: CIF/  
 Interface Slots: 9/13

Removable Disk: 2.5-5 mc  
 Fixed Head Disk: no  
 Mag Tape: 10 kc (12.5 ips)  
 20 kc (25 ips)  
 Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 245 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn

## SOFTWARE

\* Assembler 4K  
 Assembler, Macro  
 FORTRAN  
 BASIC, single user  
 \* BASIC, multi-user 8K  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 Disc Monitor  
 Real Time Monitor  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MICRODATA 7

## MICRODATA 1600/60

A communications dual processor based on the 1600 processor. Introduced in 1973, cost of a 4K system is \$10,575.

### FEATURES

- Upward compatible
- \* Field Service
- Applications Software
- Conversational Languages
- \* Communications Processor
- \* Microprogrammable Virtual Memory
- \* Multiprocessor
- Process Control
- Time Sharing

### HARDWARE

- Word size: 8 bits
- Capacity: 4-65K core
- Cycle Time: 1.0 usec
- Add Time: 2.0 usec
- Instructions<sup>1</sup>: ABDEMS/F
- Accumulators: 2
- Index Registers: 1
- Communications<sup>2</sup>: /ABDST
- Transfer Rate: 1.0 mc
- CPU Features<sup>3</sup>: CIF/
- Interface Slots: 13
- Removable Disk: 2.5-5 mc
- Fixed Head Disk: no
- MagTape: 10 kc (12.5 ips)  
20 kc (25 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 250 lpm
- Serial Printer: no
- Display Terminal: no
- Multiplexor: asyn, syn

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- FORTRAN
- BASIC, single user
- \* BASIC, multi-user 4K
- COBOL
- RPG
- PL1
- ALGOL
- APT
- Disc Monitor
- Real Time Monitor
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup>CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.



## MICRODATA 3200

A general purpose computer with features for efficient systems programming in higher-level languages. Introduced in 1973, cost of a 4K system is \$8,000.

## FEATURES

Upward compatible  
 \* Field Service  
 Applications Software  
 Conversational Languages  
 Communications Processor

\* Microprogrammable  
 Virtual Memory  
 \* Multiprocessor  
 Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-128K mos  
 Cycle Time: .4 usec  
 Add Time: .14 usec  
 Instructions<sup>1</sup>: ABS/MF  
 Accumulators: 32  
 Index Registers: 32  
 Communications<sup>2</sup>: D/ABS<sup>1</sup>  
 Transfer Rate: 5.0 mc  
 CPU Features<sup>3</sup>: CFI/P  
 Interface Slots: bus

Removable Disk: 2.5-5 mc  
 Fixed Head Disk: no  
 Mag Tape: 10 kc (12.5 ips)  
                   20 kc (25 ips)  
 Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 250 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn

## SOFTWARE

Assembler  
 \* Assembler, Macro 4K  
 FORTRAN  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PLI

ALGOL  
 APT  
 Disc Monitor  
 Real Time Monitor  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MICRODATA 9

## MICRODATA 3230

A microprogrammed emulator of the earlier Microdata 820 processor. Introduced in 1973, cost of an 8K system is \$8,450.

### FEATURES

- Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor
- \* Microprogrammable Virtual Memory
- \* Multiprocessor Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 8-65K mos  
Cycle Time: .3 usec  
Add Time: 1.5 usec  
Instructions<sup>1</sup>: ABDEMS/F  
Accumulators: 2  
Index Registers: 1  
Communications<sup>2</sup>: D/ABST  
Transfer Rate: 5.0 mc  
CPU Features<sup>3</sup>: CFI/  
Interface Slots: ?

Removable Disk: 2.5-5 mc  
Fixed Head Disk: no  
Mag Tape: 10 kc (12.5 ips)  
20 kc (25 ips)  
Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: yes, no  
Serial Printer: no  
Display Terminal: no  
Multiplexor: asyn, syn

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 8K  
BASIC, multi-user
- COBOL
- RPG
- PLI
- ALGOL
- APT
- Disc Monitor
- Real Time Monitor
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup>CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MICRODATA 32/S

A general purpose computer which optimizes systems programming in higher-level languages. Introduced in 1973, cost of a 4K system is \$9,450.

## FEATURES

- |                            |                     |
|----------------------------|---------------------|
| Upward compatible          | * Microprogrammable |
| * Field Service            | Virtual Memory      |
| Applications Software      | Multiprocessor      |
| Conversational Languages   | Process Control     |
| * Communications Processor | Time Sharing        |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.5-5 mc    |
| Capacity: 4-128K mos                 | Fixed Head Disk: no         |
| Cycle Time: .3 usec                  | MagTape: 10 kc (12.5 ips)   |
| Add Time: .13 usec                   | 20 kc (25 ips)              |
| Instructions <sup>1</sup> : ABEMS/DF | Tape Cassettes: yes         |
| Accumulators: 5                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 5                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : D/ABST | Line Printer: 250 lpm       |
| Transfer Rate: 5.0 mc                | Serial Printer: no          |
| CPU Features <sup>3</sup> : BCDFI/MP | Display Terminal: no        |
| Interface Slots: ?                   | Multiplexor: asyn, syn      |

## SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| Assembler          | ALGOL                |
| Assembler, Macro   | APT                  |
| FORTRAN            |                      |
| BASIC, single user | * Disc Monitor 8K    |
| BASIC, multi-user  | Real Time Monitor    |
| COBOL              | Time Sharing Monitor |
| RPG                | Batch Monitor        |
| * PL1 (MPL) 4K     | Other:               |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MITSUBISHI 1

## COMPANY PROFILE

MITSUBISHI ELECTRIC CORPORATION  
2-3, Marunouchi 2-chome  
Chiyoda-ku, Tokyo Japan  
(03) 218-2111

Mitsubishi manufactures and markets an extensive variety of electrical equipment and large scale computers, and minicomputers used in general-purpose applications.

Established:	1921	
Revenue:	\$1,566 m	
Net Earnings (loss):	\$22.7 m	(3/72)
Offices:	Worldwide	
Sales:	N/A	

PRODUCTS include the MELCOM 70 and 350/5F computers, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler; BASIC and FORTRAN compilers; real-time and batch monitors.

## MITSUBISHI MELCOM 70

A general-purpose, real-time computer used in control applications. Introduced in 1971, cost of a 4K system is \$16,000.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | Multiprocessor    |
| * Conversational Languages | * Process Control |
| Communications Processor   | Time Sharing      |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 16 bits                 | Removable Disk: yes         |
| Capacity: 4-32K core               | Fixed Head Disk: yes        |
| Cycle Time: .8 usec                | Mag Tape: 60 kc (75 ips)    |
| Add Time: 1.6 usec                 |                             |
| Instructions <sup>1</sup> : AM     | Tape Cassettes: yes         |
| Accumulators: 4                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                 | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : /DA  | Line Printer: yes           |
| Transfer Rate: 2.8 mc              | Serial Printer: no          |
| CPU Features <sup>3</sup> : IP/CFM | Display Terminal: ?         |
| Interface Slots: ?                 | Multiplexor: ?              |

## SOFTWARE

- |                      |                        |
|----------------------|------------------------|
| * Assembler 4K       | ALGOL                  |
| Assembler, Macro     | APT                    |
| * FORTRAN ?K         |                        |
| * BASIC, single user | Disc Monitor           |
| BASIC, multi-user    | * Real Time Monitor ?K |
| COBOL                | Time Sharing Monitor   |
| RPG                  | Batch Monitor          |
| PL1                  | Other:                 |

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MITSUBISHI 3

## MITSUBISHI MELCOM 350/5F

A general-purpose computer, smallest of a family of medium scale computers. Introduced in 1971, cost of a 4K system is \$30,000.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: .5 usec
- Add Time: 2.0 usec
- Instructions<sup>1</sup>: AM
- Accumulators: 2
- Index Registers: 15
- Communications<sup>2</sup>: /DA
- Transfer Rate: 200 kc
- CPU Features<sup>3</sup>: IP/CFM
- Interface Slots: 8 chan.
- Removable Disk: yes
- Fixed Head Disk: yes
- MagTape: 60 kc (75 ips)
- Tape Cassettes: ?
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: yes
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN ?K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- Disc Monitor
- \* Real Time Monitor ?K
- Time Sharing Monitor
- \* Batch Monitor ?K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

MODULAR COMPUTER SYSTEMS  
1650 McNab Road  
Ft. Lauderdale, Florida 33309 USA  
(305) 974-1380

Modular Computer Systems manufactures and markets a family of computers designed for real-time applications in measurement, control, communications and scientific data processing.

Established: 1970  
Revenue: \$12.3 m  
Net Earnings (loss): \$180 k (12/72)  
Offices: Worldwide  
Sales: Over 100 ModComp computer systems.

PRODUCTS available include the ModComp I, II, III, IV/10 and IV/25 computers, as well as the following peripheral devices: disks, magnetic tape, serial and line printers, card and paper tape equipment.

SOFTWARE support includes an Assembler, Macro Assembler, BASIC, FORTRAN and RPG II compilers; real time with batch processing, real time with multiprogramming, and batch monitors.

## MODULAR COMPUTER SYSTEMS MODCOMP I

A general purpose real-time computer for measurement, control, and communications applications. Introduced in 1971, cost of a 4K system is \$4,900.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | Multiprocessor    |
| Conversational Languages   | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-24 mc   |
| Capacity: 2-32K core                 | Fixed Head Disk: .125-1 mc  |
| Cycle Time: .8 usec                  | MagTape: 10 kc (12.5 ips)   |
| Add Time: 1.6 usec                   | 72 kc (45 ips)              |
| Instructions <sup>1</sup> : B/M      | Tape Cassettes: no          |
| Accumulators: 3                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 3                   | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/ABST | Line Printer: 300-600 lpm   |
| Transfer Rate: 2.5 mc                | Serial Printer: 50-150 cps  |
| CPU Features <sup>3</sup> : I/CFP    | Display Terminal: no        |
| Interface Slots: bus                 | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                    |                        |
|--------------------|------------------------|
| * Assembler 2K     | ALGOL                  |
| Assembler, Macro   | APT                    |
| FORTRAN            |                        |
| BASIC, single user | Disc Monitor           |
| BASIC, multi-user  | * Real Time Monitor 4K |
| COBOL              | Time Sharing Monitor   |
| RPG                | Batch Monitor          |
| PL1                | Other:                 |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MODULAR 3

## MODULAR COMPUTER SYSTEMS MODCOMP II

A general purpose real time computer for measurement control, and communications applications. Introduced in 1971, cost of a 4K system is \$8,000.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-65K core  
Cycle Time: .8 usec  
Add Time: 1.6 usec  
Instructions<sup>1</sup>: ABE/M  
Accumulators: 15  
Index Registers: 7  
Communications<sup>2</sup>: DM/ABST  
Transfer Rate: 2.5 mc  
CPU Features<sup>3</sup>: I/CFMP  
Interface Slots: bus

Removable Disk: 2.4-24 mc  
Fixed Head Disk: .128-2 mc  
Mag Tape: 10 kc (12.5 ips)  
72 kc (45 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 300-600 lpm  
Serial Printer: 50-150 cps  
Display Terminal: no  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 16K
- \* FORTRAN 16K
- \* BASIC, single user 16K
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 16K
- \* Real Time Monitor 16 K
- Time Sharing Monitor
- \* Batch Monitor 12K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MODULAR COMPUTER SYSTEMS MODCOMP III

A general purpose real time computer for measurement, control, and communications applications. Introduced in 1970, cost of a 4K system is \$11,050.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| * Upward compatible        | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | * Multiprocessor  |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

Word size: 16 bits	Removable Disk: 2.4-24 mc
Capacity: 4-65K core	Fixed Head Disk: .128-2 mc
Cycle Time: .8 usec	Mag Tape: 10 kc (12.5 ips)
Add Time: 1.6 usec	72 kc (45 ips)
Instructions <sup>1</sup> : ABE/FM	Tape Cassettes: no
Accumulators: 15	Paper Tape RD, PN: yes, yes
Index Registers: 7	Card RD, PN: yes, yes
Communications <sup>2</sup> : DM/ABST	Line Printer: 300-600 lpm
Transfer Rate: 2.5 mc	Serial Printer: 50-150 cps
CPU Features <sup>3</sup> : FIP/CM	Display Terminal: no
Interface Slots: bus	Multiplexor: asyn, syn, A-D

## SOFTWARE

* Assembler 4K	ALGOL
* Assembler, Macro 16K	APT
* FORTRAN 16K	
* BASIC, single user 16K	* Disc Monitor 16K
BASIC, multi-user	* Real Time Monitor 16K
COBOL	Time Sharing Monitor
RPG	* Batch Monitor 12K
PLI	Other:

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bissynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

MODULAR 5

## MODULAR COMPUTER SYSTEMS MODCOMP IV/10

The newest Modcomp computer, with 32 bit processing capability. Introduced in 1974, cost of a 16K system is \$20,100.

### FEATURES

- Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- \* Communications Processor

- Microprogrammable
- Virtual Memory
- \* Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16/32 bits  
Capacity: 16-65K core  
Cycle Time: .64 usec  
Add Time: .8 usec  
Instructions<sup>1</sup>: ABEMS/F  
Accumulators: 15  
Index Registers: 7  
Communications<sup>2</sup>: DM/ABST  
Transfer Rate: 3.1 mc  
CPU Features<sup>3</sup>: FIP/CM  
Interface Slots: bus

Removable Disk: 2.4-24 mc  
Fixed Head Disk: .128-2 mc  
Mag Tape: 10 kc (12.5 ips)  
72 kc (45 ips)  
Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 300-600 lpm  
Serial Printer: 50-150 cps  
Display Terminal: no  
Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 16K
- \* FORTRAN 16K
- \* BASIC, single user 16K
- BASIC, multi-user
- COBOL
- \* RPG ?K
- PLI

- ALGOL
- APT
- \* Disc Monitor 16K
- \* Real Time Monitor 16K
- Time Sharing Monitor
- \* Batch Monitor 12K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## MODULAR COMPUTER SYSTEMS MODCOMP IV/25

A real-time computer with 32 bit processing capability and extensive register operations. Introduced in 1974, cost of a 16K system is \$25,100.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| Applications Software      | * Multiprocessor  |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                       |                             |
|---------------------------------------|-----------------------------|
| Word size: 16/32 bits                 | Removable Disk: 2.4-24 mc   |
| Capacity: 16-262K core                | Fixed Head Disk: .128-2 mc  |
| Cycle Time: .64 usec                  | Mag Tape: 10 kc (12.5 ips)  |
| Add Time: .8 usec                     | 72 kc (45 ips)              |
| Instructions <sup>1</sup> : ABEMS/F   | Tape Cassettes: no          |
| Accumulators: 240                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 112                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : DM/ABST | Line Printer: 300-600 lpm   |
| Transfer Rate: 3.1 mc                 | Serial Printer: 50-150 cps  |
| CPU Features <sup>3</sup> : BDFIP/C   | Display Terminal: no        |
| Interface Slots: bus                  | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                          |                         |
|--------------------------|-------------------------|
| * Assembler 4K           | ALGOL                   |
| * Assembler, Macro 16K   | APT                     |
| * FORTRAN 16K            |                         |
| * BASIC, single user 16K | * Disc Monitor 16K      |
| BASIC, multi-user        | * Real Time Monitor 16K |
| COBOL                    | Time Sharing Monitor    |
| * RPG ?K                 | * Batch Monitor 12K     |
| PLI                      | Other:                  |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

NIPPON 1

## COMPANY PROFILE

NIPPON ELECTRIC COMPANY, LTD.  
7-15, Shiba 5-chome  
Minato-ku, Tokyo Japan  
(03) 452-1111

Nippon manufactures and markets extensive telephone and communications equipment, large scale computers, and minicomputers used in data communications processing.

Established:	1899	
Revenues:	\$1,804 m	
Net Earnings (loss):	\$75.5 m	(5/71)
Offices:	Worldwide	
Sales:	N/A	

PRODUCTS include the 3200/30 and 50 computers, plus the following peripheral devices: disks, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler and FORTRAN compiler; disk, real-time, and batch monitors.

## NIPPON NEAC-3200/30

A general-purpose, real-time computer used for communications applications. Introduced in 1971, cost of a 4K system is available on request.

## FEATURES

*Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: yes
Capacity: 4-16K core	Fixed Head Disk: yes
Cycle Time: 1.6 usec	Mag Tape: yes
Add Time: 3.2 usec	
Instructions <sup>1</sup> : AEM	Tape Cassettes: ?
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : D/A	Line Printer: yes
Transfer Rate: 300 kc	Serial Printer: no
CPU Features <sup>3</sup> : BDI/CFP	Display Terminal: ?
Interface Slots: ?	Multiplexor: ?

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
*FORTRAN ?K	
BASIC, single user	*Disc Monitor ?K
BASIC, multi-user	*Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	*Batch Monitor ?K
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

NIPPON 3

## NIPPON NEAC-3200/50

A general-purpose, real-time computer. Introduced in 1969, cost of an 8K system is available on request.

### FEATURES

Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

### HARDWARE

Word size: 16 bits	Removable Disk: yes
Capacity: 8-32K core	Fixed Head Disk: yes
Cycle Time: .96 usec	Mag Tape: yes
Add Time: 1.9 usec	
Instructions <sup>1</sup> : AEM	Tape Cassettes: yes
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : D/A	Line Printer: yes
Transfer Rate: 2.0 mc	Serial Printer: yes
CPU Features <sup>3</sup> : BDIP/CF	Display Terminal: ?
Interface Slots: ?	Multiplexor: ?

### SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
* FORTRAN ?K	
BASIC, single user	* Disc Monitor ?K
BASIC, multi-user	* Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	* Batch Monitor ?K
PL1	Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

NORSK 1

## COMPANY PROFILE

A/S NORSK DATA-ELECTRONIKK  
Erick Mogensons vei 38  
Oslo 5, Norway  
21-73-71

Norsk Data-Elektronikk manufactures and markets mini-computers for scientific data processing.

Established: ?

Revenues: ?

Net Earnings (loss): ?

Offices: Worldwide

Sales: N/A

PRODUCTS available include the Nord 1 and 20 computers, plus the following peripheral devices: disks, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, and a FORTRAN compiler; and a real-time monitor.

## NORSK NORD-1

A general-purpose computer designed to optimize multi-programming in a real-time environment. Introduced in 1968, a 4K system leases for \$600 per month.

## FEATURES

Upward compatible  
\*Field Service  
\*Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\*Process Control  
Time Sharing

## HARDWARE

Word size: 16 bits  
Capacity: 4-64K core  
Cycle Time: 1.0 usec  
Add Time: 2.0 usec  
Instructions<sup>1</sup>: ABEFM  
Accumulators: 8  
Index Registers: 2  
Communications<sup>2</sup>: /ABDST  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: BDI/CFMP  
Interface Slots: 16 chan

Removable Disk: 8 mc  
Fixed Head Disk: .5 mc  
MagTape: 30 kc (37.5 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 360-1000 lpm  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: A-D

## SOFTWARE

\*Assembler ?K  
Assembler, Macro  
\*FORTRAN ?K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
Disc Monitor  
\*Real Time Monitor ?K  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

NORSK 3

## NORSK NORD-20

A general-purpose computer designed for multiprogramming in real-time environments. Introduced in 1972, a 4K system leases for \$300 per month.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- Conversational Languages
- Communications Processor

- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-16K core  
Cycle Time: 1.2 usec  
Add Time: 2.4 usec  
Instructions<sup>1</sup>: ABE  
Accumulators: 8  
Index Registers: 2  
Communications<sup>2</sup>: /DABST  
Transfer Rate: 1.0 mc  
CPU Features<sup>3</sup>: BDI/CFMP  
Interface Slots: 16 chan

Removable Disk: 8 mc  
Fixed Head Disk: .5 mc  
Mag Tape: 30 kc (37.5 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 360-1100 lpm  
Serial Printer: no  
Display Terminal: yes  
Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN ?K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1

- ALGOL
- APT
- Disc Monitor
- \* Real Time Monitor ?K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

OMNUS 1

## COMPANY PROFILE

OMNUS COMPUTER CORPORATION  
1538 East Chestnut Street  
Santa Ana, California 92701 USA  
(714) 547-8444

Omnus manufactures and markets a general-purpose, real-time computer, used either in custom-supported applications, or as a communications concentrator. Omnus specializes in contract software support and system design.

Established: 1970  
Revenues: N/A  
Net Earnings (loss): N/A (privately held)  
Offices: U.S. and France  
Sales: N/A

PRODUCTS available include the Omnus-1 computer and Omnus-11C communications concentrator.

SOFTWARE support includes a Macro Assembler, a communications monitor, and a math library. Customized software support is available.

## OMNUS OMNUS-1

A general-purpose computer with extensive hardware for optimizing input/output and stack processing functions. Introduced in 1971, cost of a 4K system is \$8,500.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
Conversational Languages	Process Control
*Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: ?
Capacity: 2-32K core	Fixed Head Disk: ?
Cycle Time: 1.2 usec	Mag Tape: ?
Add Time: 2.4 usec	
Instructions <sup>1</sup> : ABS/PM	Tape Cassettes: ?
Accumulators: 2049	Paper Tape RD, PN: ?
Index Registers: 2048	Card RD, PN: ?
Communications <sup>2</sup> : D	Line Printer: ?
Transfer Rate: 1.66 mc	Serial Printer: ?
CPU Features <sup>3</sup> : FI/CM	Display Terminal: ?
Interface Slots: ?	Multiplexor: ?

## SOFTWARE

* Assembler 4K	ALGOL
* Assembler, Macro 4K	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

PHILIPS 1

## COMPANY PROFILE

PHILIPS ELECTROLOGICA N.V.  
P.O. Box 245  
Apeldoorn, The Netherlands  
05760-30123

Philips manufactures and markets a family of small computers with general-purpose, real-time capabilities. Software with small core requirements aids OEM and industrial control uses.

Established: 1968

Revenues: N/A

Net Earnings (loss): N/A

Offices: Worldwide

Sales: Over 200 minicomputer systems

PRODUCTS include the P850, P855, and P860 computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, line printers, paper tape and card equipment.

SOFTWARE support includes Assemblers, a Macro Assembler, and FORTRAN IV compilers; disk and real-time monitors; and a math library.

## PHILIPS P850

A general-purpose computer designed for OEM and industrial control uses. Introduced in 1971, cost of a 4K system is \$4,600.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| * Upward compatible      | Microprogrammable |
| * Field Service          | Virtual Memory    |
| Applications Software    | Multiprocessor    |
| Conversational Languages | * Process Control |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                   |                             |
|-----------------------------------|-----------------------------|
| Word size: 16 bits                | Removable Disk: 2.7 mc      |
| Capacity: 1-4K core               | Fixed Head Disk: .28 mc     |
| Cycle Time: 3.2 usec              | Mag Tape: 20 kc (25 ips)    |
| Add Time: 6.4 usec                | 36 kc (45 ips)              |
| Instructions <sup>1</sup> : AB    | Tape Cassettes: yes         |
| Accumulators: 14                  | Paper Tape RD, PN: yes, yes |
| Index Registers: 14               | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : /DA | Line Printer: 245-670 lpm   |
| Transfer Rate: 2.0 mc             | Serial Printer: no          |
| CPU Features <sup>3</sup> : I/CP  | Display Terminal: yes       |
| Interface Slots: 8                | Multiplexor: no             |

## SOFTWARE

- |                    |                      |
|--------------------|----------------------|
| * Assembler 2K     | ALGOL                |
| Assembler, Macro   | APT                  |
| FORTRAN            |                      |
| BASIC, single user | Disc Monitor         |
| BASIC, multi-user  | Real Time Monitor    |
| COBOL              | Time Sharing Monitor |
| RPG                | Batch Monitor        |
| PL1                | Other:               |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## PHILIPS P855

A general-purpose, real-time computer designed for OEM and industrial control uses. Introduced in 1972, cost of a 4K system is \$5,030.

### FEATURES

- \* Upward compatible
- \* Field Service
  - Applications Software
  - Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-16K core
- Cycle Time: 1.6 usec
- Add Time: 3.2 usec
- Instructions<sup>1</sup>: AB/M
- Accumulators: 14
- Index Registers: 14
- Communications<sup>2</sup>: /AD
- Transfer Rate: 3.4 mc
- CPU Features<sup>3</sup>: I/CFM
- Interface Slots: 8
- Removable Disk: 2.7 mc
- Fixed Head Disk: .28 mc
- Mag Tape: 20 kc (25 ips)  
36 kc (45 ips)
- Tape Cassettes: yes
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 245-670 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 2K, 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K, 12K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1
- ALGOL
- APT
- \* Disc Monitor 4K, 8K
- \* Real Time Monitor 8K
- Time Sharing Monitor
- Batch Monitor
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## PHILIPS P860

A general-purpose, real-time computer designed for OEM and industrial control uses. Introduced in 1972, cost of a 4K system is \$5,030.

## FEATURES

- |                           |                   |
|---------------------------|-------------------|
| Upward compatible         | Microprogrammable |
| *Field Service            | Virtual Memory    |
| Applications Software     | Multiprocessor    |
| Conversational Languages  | *Process Control  |
| *Communications Processor | Time Sharing      |

## HARDWARE

- |                                   |                             |
|-----------------------------------|-----------------------------|
| Word size: 16 bits                | Removable Disk: 2.7 mc      |
| Capacity: 4-16K core              | Fixed Head Disk: .28 mc     |
| Cycle Time: .84 usec              | Mag Tape: 20 kc (25 ips)    |
| Add Time: 1.68 usec               | 36 kc (45 ips)              |
| Instructions <sup>1</sup> : AB/EM | Tape Cassettes: yes         |
| Accumulators: 14                  | Paper Tape RD, PN: yes, yes |
| Index Registers: 14               | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : /AD | Line Printer: 245-670 lpm   |
| Transfer Rate: 4.8 mc             | Serial Printer: no          |
| CPU Features <sup>3</sup> : /CFIM | Display Terminal: yes       |
| Interface Slots: 8                | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                       |                        |
|-----------------------|------------------------|
| * Assembler 2K, 4K    | ALGOL                  |
| * Assembler, Macro 8K | APT                    |
| * FORTRAN 8K, 12K     |                        |
| BASIC, single user    | * Disc Monitor 4K, 8K  |
| BASIC, multi-user     | * Real Time Monitor 8K |
| COBOL                 | Time Sharing Monitor   |
| RPG                   | Batch Monitor          |
| PL1                   | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

PRIME 1

## COMPANY PROFILE

PRIME COMPUTER INCORPORATED  
23 Strathmore Road  
Natick, Massachusetts 01760 USA  
(617) 655-6988

Prime manufactures and markets a series of general-purpose computers, designed for efficient systems programming in FORTRAN language.

Established:	1972	
Revenue:	N/A	
Net Earnings (loss):	N/A	(Privately held)
Offices:	Worldwide	
Sales:	N/A	

PRODUCTS available include the Prime 100, 200 and 300 computers, plus the following peripheral devices: disks, magnetic tape, line and serial printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, and FORTRAN IV compilers; disk, real-time, real-time with batch processing, batch, and time sharing monitors; and a math library.

## PRIME 100

The low end of a series of general-purpose, real-time computers. Introduced in 1973, the cost of a 4K system is \$4,600.

## FEATURES

- \* Upward compatible
- \* Field Service
  - Applications Software
  - Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-32K MOS  
 Cycle Time: 1.0 usec  
 Add Time: 2.44 usec  
 Instructions<sup>1</sup>: AB  
 Accumulators: 1  
 Index Registers: 1  
 Communications<sup>2</sup>: D/ABT  
 Transfer Rate: 1.4 mc  
 CPU Features<sup>3</sup>: I/CP  
 Interface Slots: bus

Removable Disk: 3-24 mc  
 Fixed Head Disk: .26-.5 mc  
 MagTape: 36 kc (45 ips)

Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, no  
 Line Printer: 245 lpm  
 Serial Printer: 165 cps  
 Display Terminal: yes  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PL1

ALGOL  
 APT  
 \* Disc Monitor 8K  
 \* Real Time Monitor 8K  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

PRIME 3

## PRIME 200

The middle of a series of general-purpose, real-time computers. Introduced in 1972, the cost of a 4K system is \$5,900.

### FEATURES

- \* Upward compatible
- \* Field Service
  - Applications Software
  - Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K MOS
- Cycle Time: .75 usec
- Add Time: 1.96 usec
- Instructions<sup>1</sup>: AB/EM
- Accumulators: 1
- Index Registers: 1
- Communications<sup>2</sup>: D/ABT
- Transfer Rate: 2.0 mc
- CPU Features<sup>3</sup>: IDP/CF
- Interface Slots: bus
- Removable Disk: 3-24 mc
- Fixed Head Disk: .2-.5 mc
- MagTape: 36 kc (45 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 245 lpm
- Serial Printer: 165 cps
- Display Terminal: yes
- Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 12K
  - BASIC, single user
  - BASIC, multi-user
  - COBOL
  - RPG
  - PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 8K
  - Time Sharing Monitor
  - Batch Monitor
  - Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## PRIME 300

The top of a series of general-purpose, real-time computers. Introduced in 1973, the cost of an 8K system is \$12,500.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	*Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	*Process Control
*Communications Processor	*Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 3-24 mc
Capacity: 8-256K core	Fixed Head Disk: .2-.5 mc
Cycle Time: .60 usec	Mag Tape: 36 kc (45 ips)
Add Time: 1.5 usec	
Instructions <sup>1</sup> : ABEMS/F	Tape Cassettes: no
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : D/ABT	Line Printer: 245 lpm
Transfer Rate: 2.5 mc	Serial Printer: 165 cps
CPU Features <sup>3</sup> : IMP/CF	Display Terminal: yes
Interface Slots: bus	Multiplexor: asyn, syn, A-D

## SOFTWARE

*Assembler 4K	ALGOL
*Assembler, Macro 8K	APT
*FORTRAN 12K	
BASIC, single user	*Disc Monitor 8K
BASIC, multi-user	*Real Time Monitor 8K
COBOL	*Time Sharing Monitor ?
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

QUANTEL 1

## COMPANY PROFILE

QUANTEL CORPORATION  
3474 Investment Blvd  
Hayward, California 94545 USA  
(415) 783-3410

Quantel manufactures and markets a business data processing computer with multiple terminal capabilities and extensive business applications software.

Established: 1969  
Revenues: N/A  
Net Earnings (loss): N/A  
Offices: U.S., Japan  
Sales: Over 150 business computer systems.

PRODUCTS available include the ANSWER computer, plus the following peripheral devices: disks, magnetic tape, serial and line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler; and business applications packages.

## QUANTEL ANSWER

A business accounting computer for business data processing. Introduced in 1972, cost of a 4K system is \$12,300.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
Conversational Languages	Process Control
*Communications Processor	Time Sharing

## HARDWARE

Word size: 8 bits	Removable Disk: 7.6-30 mc
Capacity: 4-32K mos	Fixed Head Disk: no
Cycle Time: 1.5 usec	Mag Tape: 10 kc (12.5 ips)
Add Time: 58.5 usec	60 kc (75 ips)
Instructions <sup>1</sup> : ABDM	Tape Cassettes: no
Accumulators: memory	Paper Tape RD, PN: yes, yes
Index Registers: 0	Card RD, PN: yes, no
Communications <sup>2</sup> : D/ABST	Line Printer: 200-700 lpm
Transfer Rate: 660 kc	Serial Printer: 30-132 cps
CPU Features <sup>3</sup> : FI/C	Display Terminal: yes
Interface Slots: 12 chan	Multiplexor: asyn, syn

## SOFTWARE

*Assembler 4K	ALGOL
Assembler, Macro	APT
FORTRAN	
BASIC, single user	Disc Monitor
BASIC, multi-user	Real Time Monitor
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PLI	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

RAYTHEON DATA SYSTEMS COMPANY  
1415 Boston-Providence Tpke.  
Norwood, Massachusetts 02062 USA  
(617) 762-6700

Raytheon manufactures and markets a general-purpose, real-time computer for scientific data processing, plus an array transform and analog processor.

Established:	1922	
Revenue:	\$1,465 m	
Net Earnings (loss):	\$37.9 m	(12/72)
Offices:	Worldwide	
Sales:	Over 250 Model 704 computer systems.	

PRODUCTS available include the 704 computer, array and analog processors, plus the following peripheral devices: disks, magnetic tape, line printers - plotters, paper tape and card equipment.

SOFTWARE support includes an Assembler, conversational FORTRAN and FORTRAN IV compilers; disk and real-time monitors; an extensive math library, and applications software.

## RAYTHEON 704

A general-purpose computer used primarily for scientific data processing. Introduced in 1970, cost of a 4K system is \$7,200.

## FEATURES

Upward compatible  
 \*Field Service  
 \*Applications Software  
 \*Conversational Languages  
 \*Communications Processor

Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \*Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-32K core  
 Cycle Time: 1.0 usec  
 Add Time: 2.0 usec  
 Instructions<sup>1</sup>: B/M  
 Accumulators: 1  
 Index Registers: 4  
 Communications<sup>2</sup>: /ADST  
 Transfer Rate: 2.0 mc  
 CPU Features<sup>3</sup>: BI/CFMP  
 Interface Slots: ?

Removable Disk: 2.4-50 mc  
 Fixed Head Disk: .6-2.4 mc  
 Mag Tape: 30 kc (37.5 ips)  
 60 kc (75 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 245-3240 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, A-D

## SOFTWARE

\*Assembler 4K  
 Assembler, Macro  
 \*FORTRAN ?K  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 \*Disc Monitor ?K  
 \*Real Time Monitor ?K  
 Time Sharing Monitor  
 Batch Monitor  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

ROLM 1

## COMPANY PROFILE

ROLM CORPORATION  
18922 Forge Drive  
Cupertino, California 95019  
(408) 257-6440

RoIm manufactures and markets ruggedized computers and ruggedized peripheral devices, meeting U. S. Government MIL specs for airborne and shipboard environments.

Established: 1969

Revenue: N/A

Net Earnings (loss): N/A (privately held)

Offices: World wide

Sales: Over 450 ruggedized computer systems.

PRODUCTS available include the 1601 and 1602 Ruggednova computers, plus the following peripheral devices: disks, magnetic tape, line printers, paper tape and card equipment.

SOFTWARE support includes an Assembler, FORTRAN IV, BASIC, and ALGOL compilers; disk, and real-time monitors; and a math library.

## ROLM 1601 RUGGEDNOVA

A ruggedized computer with MIL specs for airborne and shipboard environments. Introduced in 1970, cost of a 4K system is \$15,250.

## FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- \* Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: 2.6 usec
- Add Time: 5.9 usec
- Instructions<sup>1</sup>: AB/M
- Accumulators: 4
- Index Registers: 1
- Communications<sup>2</sup>: D/A
- Transfer Rate: 570 kc
- CPU Features<sup>3</sup>: FI/C
- Interface Slots: 5
- Removable Disk: no
- Fixed Head Disk: .5 mc
- Mag Tape: 60 kc (75 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, no
- Line Printer: 356-1100 lpm
- Serial Printer: no
- Display Terminal: no
- Multiplexor: asyn, A-D

## SOFTWARE

- \* Assembler 4K
- Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 4K
- BASIC, multi-user
- COBOL
- RPG
- PL1
- \* ALGOL 12K
- APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K, 12K
- Time Sharing Monitor
- Batch Monitor
- Other:

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

ROLM 3

## ROLM 1602 RUGGEDNOVA

A ruggedized computer with MIL specs for airborne and shipboard environments. Introduced in 1973, cost of a 4K system is \$19,000.

### FEATURES

- Upward compatible
- \* Field Service Applications Software
- \* Conversational Languages Communications Processor

- Microprogrammable Virtual Memory Multiprocessor
- \* Process Control Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-65K core  
Cycle Time: 1.0 usec  
Add Time: 1.0 usec  
Instructions<sup>1</sup>: ABM/EF  
Accumulators: 4  
Index Registers: 1  
Communications<sup>2</sup>: D/A  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: FIM/CP  
Interface Slots: 5

Removable Disk: no  
Fixed Head Disk: .4 mc  
Mag Tape: 60 kc (75 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer: 356-1100 lpm  
Serial Printer: no  
Display Terminal: no  
Multiplexor: asyn, A-D

### SOFTWARE

- \* Assembler 4K  
Assembler, Macro
- \* FORTRAN 8K
- \* BASIC, single user 4K  
BASIC, multi-user  
COBOL  
RPG  
PLI

- \* ALGOL 12K  
APT
- \* Disc Monitor 12K
- \* Real Time Monitor 4K, 12K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

SIEMENS 1

## COMPANY PROFILE

SIEMENS AKTIENGESELLSCHAFT  
D-8000 Munchen 70  
Hofmannstrasse 51 West Germany

Siemens manufactures and markets an extensive variety of electrical equipment, large scale computers worldwide, and a minicomputer designed for process control.

Established:	1847
Revenue:	?
Net Earnings (loss) :	?
Offices:	Worldwide
Sales:	N/A

PRODUCTS include the 301 computer, plus the following peripheral devices: disks and card equipment.

SOFTWARE support includes an Assembler, FORTRAN, and ALGOL compilers; and a real time monitors.

## SIEMENS 301

A general-purpose, real-time computer designed for process control and scientific processing. Introduced in 1968, a 1K system leases for \$580 per month.

## FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
  - Conversational Languages
  - Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

## HARDWARE

- Word size: 24 bits
- Capacity: 1-16K core
- Cycle Time: 1.6 usec
- Add Time: 3.0 usec
- Instructions<sup>1</sup>: none
- Accumulators: 1
- Index Registers: 0
- Communications<sup>2</sup>: D/A
- Transfer Rate: 2.2 mc
- CPU Features<sup>3</sup>: I
- Interface Slots: ?
- Removable Disk: yes
- Fixed Head Disk: no
- Mag Tape: no
- Tape Cassettes: no
- Paper Tape RD, PN: no, no
- Card RD, PN: no, yes
- Line Printer: no
- Serial Printer: no
- Display Terminal: no
- Multiplexor: A-D

## SOFTWARE

- \* Assembler ?K
  - Assembler, Macro
- \* FORTRAN ?K
  - BASIC, single user
  - BASIC, multi-user
  - COBOL
  - RPG
  - PL1
- \* ALGOL ?K
  - APT
- Disc Monitor
- \* Real Time Monitor ?K
  - Time Sharing Monitor
  - Batch Monitor
  - Other:

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multiport Memory
- S = Selectable Line Speeds
- T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

SYSTEMS ENGINEERING LABORATORIES INCORPORATED  
6901 West Sunrise Blvd.  
Ft. Lauderdale, Florida 33313  
(315) 587-2900

Systems manufactures and markets several real-time computers for use in scientific data processing, power control, industrial simulation, test automation, and other process control applications.

Established: 1961

Revenues: \$17 m

Net Earnings (loss): \$513 k (6/73)

Offices: US, Canada, Europe

Sales: N/A

PRODUCTS available include the Systems 72, 85, and 86 computers, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes Assemblers, BASIC and FORTRAN compilers; real-time with batch processing, real-time with multiprogramming, and batch monitors; applications packages and math library routines.

## SYSTEMS 72

A real-time computer for scientific data processing, monitoring and sensing applications. Introduced in 1970, cost of an 8K system is \$20,000.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | * Virtual Memory  |
| Applications Software      | Multiprocessor    |
| * Conversational Languages | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.5-48 mc   |
| Capacity: 8-65K core                 | Fixed Head Disk: no         |
| Cycle Time: .8 usec                  | Mag Tape: 36 kc (45 ips)    |
| Add Time: 3.5 usec                   |                             |
| Instructions: AB/EFMS                | Tape Cassettes: no          |
| Accumulators: 8                      | Paper Tape RD, PN: yes, yes |
| Index Registers: 2                   | Card RD, PN: yes, no        |
| Communications <sup>2</sup> : M/ABD  | Line Printer: 300 lpm       |
| Transfer Rate: 2.0 mc                | Serial Printer: no          |
| CPU Features <sup>3</sup> : BDFIM/CP | Display Terminal: yes       |
| Interface Slots: 6                   | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                         |                        |
|-------------------------|------------------------|
| * Assembler 8K          | ALGOL                  |
| Assembler, Macro        | APT                    |
| * FORTRAN 8K            |                        |
| * BASIC, single user 8K | Disc Monitor           |
| BASIC, multi-user       | * Real Time Monitor 8K |
| COBOL                   | Time Sharing Monitor   |
| RPG                     | Batch Monitor          |
| PL1                     | Other:                 |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## SYSTEMS 85

A real-time computer used in scientific processing and numerous industrial control applications. Introduced in 1970, cost of an 8K system is \$82,500.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
- Conversational Languages
- \* Communications Processor
- Microprogrammable
- Virtual Memory
- \* Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

Word size: 32 bits  
 Capacity: 8-128K core  
 Cycle Time: .85 usec  
 Add Time: 1.7 usec  
 Instructions<sup>1</sup>: ABM/F  
 Accumulators: 8  
 Index Registers: 3  
 Communications<sup>2</sup>: DM/AB  
 Transfer Rate: 4.7 mc  
 CPU Features<sup>3</sup>: CIMP/F  
 Interface Slots: 16 chan.

Removable Disk: 24 mc  
 Fixed Head Disk: 2-6 mc  
 Mag Tape: 60 kc (75 ips)  
           120 kc (150 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 300-600 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn, A-D

### SOFTWARE

- \* Assembler ?K
- \* Assembler, Macro ?K
- \* FORTRAN ?K
- BASIC, single user
- BASIC, multi-user
- COBOL
- RPG
- PLI
- ALGOL
- APT
- Disc Monitor
- \* Real Time Monitor ?K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## SYSTEMS 86

A real-time computer used in scientific processing and numerous industrial control applications. Introduced in 1970, cost of an 8K system is \$106,500.

## FEATURES

Upward compatible  
 \* Field Service  
 \* Applications Software  
 \* Conversational Languages  
 \* Communications Processor

Microprogrammable  
 Virtual Memory  
 \* Multiprocessor  
 \* Process Control  
 Time Sharing

## HARDWARE

Word size: 32 bits  
 Capacity: 8-128K core  
 Cycle Time: .6 usec  
 Add Time: 1.2 usec  
 Instructions<sup>1</sup>: ABM/F  
 Accumulators: 8  
 Index Registers: 3  
 Communications<sup>2</sup>: DM/AB  
 Transfer Rate: 6.7 mc  
 CPU Features<sup>3</sup>: CIMP/F  
 Interface Slots: 16 chan.

Removable Disk: 24 mc  
 Fixed Head Disk: 2-6 mc  
 Mag Tape: 60 kc (75 ips)  
 120 kc (150 ips)  
 Tape Cassettes: no  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: 300-600 lpm  
 Serial Printer: no  
 Display Terminal: no  
 Multiplexor: asyn, syn, A-D

## SOFTWARE

\* Assembler ?K  
 \* Assembler, Macro ?K  
 \* FORTRAN ?K  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT  
 Disc Monitor  
 \* Real Time Monitor ?K  
 Time Sharing Monitor  
 \* Batch Monitor 8K  
 Other:

<sup>1</sup>INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## COMPANY PROFILE

TELEMECANIQUE  
Department Information Industrielle  
Rue de Provence  
38 Echirolles France  
(76) 09-80-55

Telemecanique manufactures and markets a series of mini-computers designed for a wide variety of industrial control applications.

Established: ?

Revenues: ?

Net Earnings (loss): ?

Offices: Worldwide

Sales: N/A

PRODUCTS available include the T1600, T2000/10 and T2000/20 computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, line and serial printers, papertape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, and FORTRAN compiler; disk, real time, and batch monitors; and applications software in modular form fitted to individual users.

## TELEMECANIQUE T1600

A general-purpose, real-time computer for industrial control applications. Introduced in 1971, cost of a 4K system is available on request.

## FEATURES

Upward compatible  
 \* Field Service  
 \* Applications Software  
 Conversational Languages  
 Communications Processor

\* Microprogrammable  
 Virtual Memory  
 Multiprocessor  
 \* Process Control  
 Time Sharing

## HARDWARE

Word size: 16 bits  
 Capacity: 4-65K core  
 Cycle Time: .8 usec  
 Add Time: 3.25 usec  
 Instructions<sup>1</sup>: AB/FMS  
 Accumulators: 12  
 Index Registers: 4  
 Communications<sup>2</sup>: D/AB  
 Transfer Rate: 2.2 mc  
 CPU Features<sup>3</sup>: BFIP/CM  
 Interface Slots: ?

Removable Disk: no  
 Fixed Head Disk: 128 kc  
 Mag Tape: yes

Tape Cassettes: yes  
 Paper Tape RD, PN: yes, yes  
 Card RD, PN: yes, yes  
 Line Printer: yes  
 Serial Printer: 13 cps  
 Display Terminal: yes  
 Multiplexor: A-D

## SOFTWARE

\* Assembler ?K  
 \* Assembler, Macro ?K  
 \* FORTRAN ?K  
 BASIC, single user  
 BASIC, multi-user  
 COBOL  
 RPG  
 PL1

ALGOL  
 APT

Disc Monitor  
 \* Real Time Monitor ?K  
 Time Sharing Monitor  
 \* Batch Monitor ?K  
 Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TELEMECANIQUE 3

## TELEMECANIQUE T2000/10

A general-purpose computer designed for industrial automation. Introduced in 1972, cost of a 4K system is available on request.

### FEATURES

- \* Upward compatible
- \* Field Service
- \* Applications Software
  - Conversational Languages
  - Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 20 bits
- Capacity: 4-32K core
- Cycle Time: 1.3 usec
- Add Time: 3.66 usec
- Instructions<sup>1</sup>: A/M
- Accumulators: 2
- Index Registers: 1
- Communications<sup>2</sup>: D/AB
- Transfer Rate: 500 kc
- CPU Features<sup>3</sup>: FIP/CM
- Interface Slots: 7
- Removable Disk: no
- Fixed Head Disk: 750 kc
- Mag Tape: 20 kc (25 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 300 lpm
- Serial Printer: 180 cps
- Display Terminal: yes
- Multiplexor: asyn, A-D

### SOFTWARE

- \* Assembler ?K
- \* Assembler, Macro ?K
- \* FORTRAN ?K
  - BASIC, single user
  - BASIC, multi-user
  - COBOL
  - RPG
  - PLI
- ALGOL
- APT
- \* Disc Monitor ?K
- \* Real Time Monitor ?K
  - Time Sharing Monitor
- \* Batch Monitor ?K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## TELEMECANIQUE T2000/20

A general-purpose computer designed for industrial automation. Introduced in 1972, cost of a 4K system is available on request.

## FEATURES

- |                          |                   |
|--------------------------|-------------------|
| Upward compatible        | Microprogrammable |
| *Field Service           | Virtual Memory    |
| *Applications Software   | Multiprocessor    |
| Conversational Languages | *Process Control  |
| Communications Processor | Time Sharing      |

## HARDWARE

- |                                    |                             |
|------------------------------------|-----------------------------|
| Word size: 20 bits                 | Removable Disk: no          |
| Capacity: 4-32K core               | Fixed Head Disk: .750 kc    |
| Cycle Time: 1.3 usec               | Mag Tape: 20 kc (25 ips)    |
| Add Time: 3.66 usec                |                             |
| Instructions <sup>1</sup> : AM/    | Tape Cassettes: no          |
| Accumulators: 2                    | Paper Tape RD, PN: yes, yes |
| Index Registers: 1                 | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : D/AB | Line Printer: 300 lpm       |
| Transfer Rate: 500 kc              | Serial Printer: 13-180 cps  |
| CPU Features <sup>3</sup> : FIP/CM | Display Terminal: yes       |
| Interface Slots: 11                | Multiplexor: asyn, A-D      |

## SOFTWARE

- |                       |                        |
|-----------------------|------------------------|
| * Assembler ?K        | ALGOL                  |
| * Assembler, Macro ?K | APT                    |
| * FORTRAN ?K          |                        |
| BASIC, single user    | * Disc Monitor ?K      |
| BASIC, multi-user     | * Real Time Monitor ?K |
| COBOL                 | Time Sharing Monitor   |
| RPG                   | * Batch Monitor ?K     |
| PL1                   | Other:                 |

<sup>1</sup>INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup>COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup>CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TEXAS INSTR. 1

## COMPANY PROFILE

TEXAS INSTRUMENTS INCORPORATED  
P.O. Box 1444  
Houston, Texas 77001 USA  
9713) 494-5115

Texas Instruments manufactures and markets a wide variety of computer-related electrical and peripheral devices worldwide, as well as minicomputers used in process control, data processing and communications.

Established: 1939  
Revenue: \$944 m  
Net Earnings (loss): \$48.0 m (7/72)  
Offices: Worldwide  
Sales: N/A

PRODUCTS available include the 960A and 980A computers, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, FORTRAN and Process Control Language compilers; a disk, multiprogramming, and real time monitors.

## TEXAS INSTRUMENTS 960A

A general-purpose computer for process and machine control applications. Introduced in 1971, cost of a 4K system is \$3,300.

## FEATURES

\*Upward compatible  
\*Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\*Process Control  
Time Sharing

## HARDWARE

Word size: 16 bits  
Capacity: 4-65K mos  
Cycle Time: .75 usec  
Add Time: 3.2 usec  
Instructions<sup>1</sup>: AB/EM  
Accumulators: 8  
Index Registers: 8  
Communications<sup>2</sup>: D/ABS  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: FIMP/C  
Interface Slots: 6

Removable Disk: 2.2 mc  
Fixed Head Disk: .1-3.6 mc  
Mag Tape: 30 kc (37.5 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 350 lpm  
Serial Printer: 100 cps  
Display Terminal: yes  
Multiplexor: A-D

## SOFTWARE

\*Assembler 8K  
\*Assembler, Macro 12K  
\*FORTRAN 12K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT

\*Disc Monitor 16K  
\*Real Time Monitor 12K  
Time Sharing Monitor  
Batch Monitor  
Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TEXAS INSTR. 3

## TEXAS INSTRUMENT 980A

A general purpose real time computer for business, communications, and remote terminal applications. Introduced in 1972, cost of a 4K system is \$3,925.

### FEATURES

Upward compatible  
\* Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-65K mos  
Cycle Time: .75 usec  
Add Time: 1.75 usec  
Instructions<sup>1</sup>: ABEM/F  
Accumulators: 2  
Index Registers: 1  
Communications<sup>2</sup>: D/ABS  
Transfer Rate: 2.0 mc  
CPU Features<sup>3</sup>: BDFIMP/C  
Interface Slots: bus

Removable Disk: 2.2 mc  
Fixed Head Disk: .1-3.6 mc  
MagTape: 30 kc (37.5 ips)

Tape Cassettes: no  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, yes  
Line Printer: 350 lpm  
Serial Printer: 100 cps  
Display Terminal: yes  
Multiplexor: A-D

### SOFTWARE

\* Assembler 8K  
\* Assembler, Macro 12K  
\* FORTRAN 12K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT

\* Disc Monitor 16K  
\* Real Time Monitor 12K  
Time Sharing Monitor  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TOSHIBA 1

## COMPANY PROFILE

TOKYO SHIBAURA ELECTRIC COMPANY, LTD  
1-6 Uchisaiwai-cho 1-chome  
Chiyoda-ku, Tokyo, Japan  
(03) 501-5411

Toshiba manufactures and markets an extensive variety of electrical equipment, large scale computers, and several minicomputers for process control and general-purpose processing.

Established: 1904  
Revenue: \$2,302 M  
Net Earnings (loss): \$33.9 M (9/72)  
Offices: Worldwide  
Sales: N/A

PRODUCTS available include the TOSBAC 10, 10E, 40, and 3000 computers, plus the following peripheral devices: disks, magnetic tape cassettes and transports, paper tape and card equipment.

SOFTWARE support includes an Assembler and FORTRAN compilers; and a disk and real-time monitor.

## TOSHIBA TOSBAC 10

A general-purpose, real-time computer. Introduced in 1970, cost of a 4K system is \$10,000.

## FEATURES

*Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 8 bits	Removable Disk: no
Capacity: 2-16K core	Fixed Head Disk: 174 kc
Cycle Time: 1.0 usec	MagTape: 26 kc (25 ips)
Add Time: 3.0 usec	
Instructions <sup>1</sup> : A	Tape Cassettes: yes
Accumulators: 1	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, no
Communications <sup>2</sup> : /AD	Line Printer:
Transfer Rate: 670 kc	Serial Printer: no
CPU Features <sup>3</sup> : P	Display Terminal: ?
Interface Slots: 10 chan	Multiplexor: ?

## SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
* FORTRAN ?K	
BASIC, single user	* Disc Monitor ?K
BASIC, multi-user	* Real Time Monitor ?K
COBOL	Time Sharing Monitor
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TOSHIBA 3

## TOSHIBA TOSBAC 10E

A general-purpose, real-time computer. Introduced in 1972, cost of an 8K system is \$8,000.

### FEATURES

* Upward compatible	Microprogrammable
* Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	Process Control
Communications Processor	Time Sharing

### HARDWARE

Word size: 8 bits	Removable Disk: no
Capacity: 8-16K core	Fixed Head Disk: 174 kc
Cycle Time: .8 usec	Mag Tape: 26 kc (25 ips)
Add Time: 3.0 usec	Tape Cassettes: yes
Instructions <sup>1</sup> : A	Paper Tape RD, PN: yes, yes
Accumulators: 1	Card RD, PN: yes, no
Index Registers: 0	Line Printer:
Communications <sup>2</sup> : /AD	Serial Printer: no
Transfer Rate: 600 kc	Display Terminal: ?
CPU Features <sup>3</sup> : 1C	Multiplexor: ?
Interface Slots: 10 chan	

### SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
* FORTRAN ?K	* Disc Monitor ?K
BASIC, single user	* Real Time Monitor ?K
BASIC, multi-user	Time Sharing Monitor
COBOL	Batch Monitor
RPG	Other:
PLI	

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multipoint Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.



## TOSHIBA TOSBAC 40

A general-purpose, real-time computer. Introduced in 1970, cost of an 8K system is \$16,000.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
Applications Software	Multiprocessor
Conversational Languages	*Process Control
Communications Processor	*Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: no
Capacity: 8-64K core	Fixed Head Disk: 174 kc
Cycle Time: 1.0 usec	Mag Tape: 26 kc (25 ips)
Add Time: 3.0 usec	
Instructions <sup>1</sup> : FM	Tape Cassettes: yes
Accumulators: 16	Paper Tape RD, PN: yes, yes
Index Registers: 15	Card RD, PN: yes, no
Communications <sup>2</sup> : /AD	Line Printer:
Transfer Rate: 600 kc	Serial Printer: no
CPU Features <sup>3</sup> : none	Display Terminal: ?
Interface Slots: 10 chan.	Multiplexor: ?

## SOFTWARE

* Assembler 4K	ALGOL
Assembler, Macro	APT
* FORTRAN ?K	
BASIC, single user	* Disc Monitor ?K
BASIC, multi-user	* Real Time Monitor ?K
COBOL	* Time Sharing Monitor ?K
RPG	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

TOSHIBA 5

## TOSHIBA TOSBAC 3000

A general-purpose, real-time computer designed for process control. Introduced in 1967, cost of a 4K system is \$30,000.

### FEATURES

Upward compatible  
\* Field Service  
Applications Software  
Conversational Languages  
Communications Processor

Microprogrammable  
Virtual Memory  
Multiprocessor  
\* Process Control  
\* Time Sharing

### HARDWARE

Word size: 16 bits  
Capacity: 4-32K core  
Cycle Time: 1.2 usec  
Add Time: 2.4 usec  
Instructions<sup>1</sup>: none  
Accumulators: 1  
Index Registers: 1  
Communications<sup>2</sup>: ?  
Transfer Rate: 700 kc  
CPU Features<sup>3</sup>: none  
Interface Slots: 8 chan

Removable Disk: no  
Fixed Head Disk: 250 kc  
MagTape: 96 kc (112.5 ips)

Tape Cassettes: yes  
Paper Tape RD, PN: yes, yes  
Card RD, PN: yes, no  
Line Printer:  
Serial Printer: no  
Display Terminal: ?  
Multiplexor: ?

### SOFTWARE

\* Assembler 4K  
Assembler, Macro  
\* FORTRAN ?K  
BASIC, single user  
BASIC, multi-user  
COBOL  
RPG  
PL1

ALGOL  
APT  
  
Disc Monitor  
\* Real Time Monitor ?K  
\* Time Sharing Monitor ?K  
Batch Monitor  
Other:

#### <sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
B = Byte Manipulation  
D = Decimal Arithmetic  
E = Extended Precision  
F = Floating Point  
M = Multiply, Divide  
S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
B = Bisynchronous  
D = Direct Memory Access  
M = Multiport Memory  
S = Selectable Line Speeds  
T = Autodial

#### <sup>3</sup> CPU FEATURES

B = Base Address Relocation  
C = Real Time Clock  
D = Dynamic Page Relocation  
F = Power Fail Safe  
I = Interrupt  
M = Memory Protection  
P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

VARIAN 1

## COMPANY PROFILE

VARIAN DATA MACHINES  
2722 Michelson Drive  
Irvine, California 92664 USA  
(714) 833-2400

Varian Data, a subsidiary of Varian Associates, manufactures and markets a family of general purpose computers with extensive operating systems software.

Established:	1948	
Revenue:	\$203.8 M	
Net Earnings (loss):	\$3.9 M	(9/72)
Offices:	Worldwide	
Sales:	Over 3000 computer series systems	

PRODUCTS available include the Varian 73, 620/f-100, 620/L, and 620/L-100 computers plus the following peripheral devices: disks, magnetic tape, line printers and plotters, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro Assembler, BASIC, FORTRAN IV, and RPG IV compilers; disk based real-time with multiprogramming, batch, and small real-time monitors.

## VARIAN DATA VARIAN 73

A general-purpose, real-time computer with high-speed processing and throughput. Introduced in 1972, cost of a 4K system is \$13,000.

## FEATURES

- |                            |                     |
|----------------------------|---------------------|
| Upward compatible          | * Microprogrammable |
| * Field Service            | Virtual Memory      |
| Applications Software      | Multiprocessor      |
| * Conversational Languages | * Process Control   |
| Communications Processor   | Time Sharing        |

## HARDWARE

- |                                      |                             |
|--------------------------------------|-----------------------------|
| Word size: 16 bits                   | Removable Disk: 2.4-29 mc   |
| Capacity: 4-65K core                 | Fixed Head Disk: 128-980 mc |
| Cycle Time: .66/.33 usec             | Mag Tape: 20 kc (25 ips)    |
| Add Time: .66/.33 usec               | 30 kc (37.5 (ips))          |
| Instructions <sup>1</sup> : ABM      | Tape Cassettes: no          |
| Accumulators: 16                     | Paper Tape RD, PN: yes, yes |
| Index Registers: 16                  | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : DM/A   | Line Printer: 245 lpm       |
| Transfer Rate: 6.06 mc               | Serial Printer: no          |
| CPU Features <sup>3</sup> : CIF/BDMP | Display Terminal: yes       |
| Interface Slots: 5                   | Multiplexor: A-D            |

## SOFTWARE

- |                         |                            |
|-------------------------|----------------------------|
| * Assembler 4K          | ALGOL                      |
| * Assembler, Macro 8K   | APT                        |
| * FORTRAN 8K            |                            |
| * BASIC, single user 8K | * Disc Monitor 8K          |
| BASIC, multi-user       | * Real Time Monitor 4K, 8K |
| COBOL                   | Time Sharing Monitor       |
| * RPG 4K                | * Batch Monitor 8K         |
| PLI                     | Other:                     |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

VARIAN 3

## VARIAN DATA VARIAN 620/f-100

A general-purpose, real-time computer with extensive operating systems software. Introduced in 1972, cost of a 4K system is \$11,100.

### FEATURES

- \* Upward compatible
- \* Field Service
- Applications Software
- \* Conversational Languages
- Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control
- Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: .75 usec
- Add Time: 1.5 usec
- Instructions: ABM
- Accumulators: 2
- Index Registers: 1
- Communications<sup>2</sup>: D/A
- Transfer Rate: 2.66 mc
- CPU Features<sup>3</sup>: CFIM/
- Interface Slots: 12
- Removable Disk: 2.4-29 mc
- Fixed Head Disk: 128-980 kc
- MagTape: 20 kc (25 ips)
- 30 kc (37.5 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 250 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K
- \* BASIC, single user 8K
- BASIC, multi-user
- COBOL
- \* RPG 4K
- PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 4K, 8K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

## VARIAN DATA VARIAN 620/L

A general-purpose, real-time computer with extensive operating systems software. Introduced in 1971, cost of a 4K system is \$6,000.

## FEATURES

- |                                       |                   |
|---------------------------------------|-------------------|
| * Upward compatible                   | Microprogrammable |
| * Field Service Applications Software | Virtual Memory    |
| * Conversational Languages            | Multiprocessor    |
| Communications Processor              | * Process Control |
|                                       | Time Sharing      |

## HARDWARE

Word size: 16 bits	Removable Disk: 2.4-29 mc
Capacity: 4-32K core	Fixed Head Disk: 128-980 kc
Cycle Time: 1.8 usec	Mag Tape: 20 kc (25 ips)
Add Time: 3.6 usec	30 kc (37.5 ips)
Instructions <sup>1</sup> : ABM	Tape Cassettes: no
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 1	Card RD, PN: yes, yes
Communications <sup>2</sup> : D/A	Line Printer: 250 lpm
Transfer Rate: 200 kc	Serial Printer: no
CPU Features <sup>3</sup> : CFI/M	Display Terminal: yes
Interface Slots: 8	Multiplexor: A-D

## SOFTWARE

* Assembler 4K	ALGOL
* Assembler, Macro 8K	APT
* FORTRAN 8K	
* BASIC, single user 8K	* Disc Monitor 8K
BASIC, multi-user	* Real Time Monitor 4K, 8K
COBOL	Time Sharing Monitor
* RPG 4K	* Batch Monitor 8K
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

VARIAN 5

## VARIAN DATA VARIAN 620/L-100

A general-purpose, real-time computer with extensive operating system software. Introduced in 1972, cost of a 4K system is \$6,000.

### FEATURES

- \* Upward compatible
- \* Field Service Applications Software
- \* Conversational Languages Communications Processor
- Microprogrammable
- Virtual Memory
- Multiprocessor
- \* Process Control Time Sharing

### HARDWARE

- Word size: 16 bits
- Capacity: 4-32K core
- Cycle Time: .95 usec
- Add Time: 1.9 usec
- Instructions<sup>1</sup>: ABM
- Accumulators: 2
- Index Registers: 1
- Communications<sup>2</sup>: D/A
- Transfer Rate: 766 kc
- CPU Features<sup>3</sup>: CFI/
- Interface Slots: 8
- Removable Disk: 2.4-29 mc
- Fixed Head Disk: 128-980 kc
- Mag Tape: 20 kc (25 ips)  
30 kc (37.5 ips)
- Tape Cassettes: no
- Paper Tape RD, PN: yes, yes
- Card RD, PN: yes, yes
- Line Printer: 245 lpm
- Serial Printer: no
- Display Terminal: yes
- Multiplexor: A-D

### SOFTWARE

- \* Assembler 4K
- \* Assembler, Macro 8K
- \* FORTRAN 8K
- \* BASIC, single user 8K
- BASIC, multi-user
- COBOL
- \* RPG 4K
- PL1
- ALGOL
- APT
- \* Disc Monitor 8K
- \* Real Time Monitor 4K, 8K
- Time Sharing Monitor
- \* Batch Monitor 8K
- Other:

#### <sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing
- B = Byte Manipulation
- D = Decimal Arithmetic
- E = Extended Precision
- F = Floating Point
- M = Multiply, Divide
- S = Stack Processing

#### <sup>2</sup> COMMUNICATIONS:

- A = Asynchronous
- B = Bisynchronous
- D = Direct Memory Access
- M = Multipoint Memory
- S = Selectable Line Speeds
- T = Autodial

#### <sup>3</sup> CPU FEATURES

- B = Base Address Relocation
- C = Real Time Clock
- D = Dynamic Page Relocation
- F = Power Fail Safe
- I = Interrupt
- M = Memory Protection
- P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

WESTINGHOUSE 1

## COMPANY PROFILE

WESTINGHOUSE ELECTRIC CORPORATION  
Computer Department  
1200 West Colonial Drive  
Orlando, Florida 32804 USA  
(305) 843-7030

Westinghouse manufactures and markets a number of special-purpose computers for process control applications, as well as a minicomputer used in process control, data acquisition and remote terminal configuration.

Established:	1892	
Revenue:	\$5,086 m	
Net Earnings (loss):	\$198 m	(1/73)
Offices:	Worldwide	
Sales:	Over 120 small computer systems	

PRODUCTS available include the 2500 computer, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes Assemblers, a Macro Assembler, BASIC II, BASIC III, FORTRAN IV, and disk-based RPG compilers; disk and real time monitors; applications packages and math library routines.

## WESTINGHOUSE 2500

A real-time computer used in process control, instrumentations, and remote batch terminal configurations. Introduced in 1971, cost of 4K system is \$10,450.

## FEATURES

Upward compatible	Microprogrammable
*Field Service	Virtual Memory
*Applications Software	Multiprocessor
*Conversational Languages	Process Control
Communications Processor	Time Sharing

## HARDWARE

Word size: 16 bits	Removable Disk: 2.5-20 mc
Capacity: 4-65K core	Fixed Head Disk: .12-2 mc
Cycle Time: .75 usec	MagTape: 20 kc (25 ips)
Add Time: 1.5 usec	
Instructions <sup>1</sup> : ADM/F	Tape Cassettes: no
Accumulators: 2	Paper Tape RD, PN: yes, yes
Index Registers: 2	Card RD, PN: yes, yes
Communications <sup>2</sup> : /ABDS	Line Printer: 300-600 lpm
Transfer Rate: 1.2 mc	Serial Printer: no
CPU Features <sup>3</sup> : CFIMP/	Display Terminal: yes
Interface Slots: 9	Multiplexor: no

## SOFTWARE

*Assembler 4K	ALGOL
*Assembler, Macro 8K	APT
*FORTRAN 16K	
*BASIC, single user 4K, 8K	*Disc Monitor 8K
BASIC, multi-user	*Real Time Monitor 16K
COBOL	Time Sharing Monitor
*RPG 16K	Batch Monitor
PL1	Other:

<sup>1</sup> INSTRUCTIONS:

A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multiport Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

# MINICOMPUTER REVIEW

XEROX 1

## COMPANY PROFILE

XEROX CORPORATION  
701 South Aviation Blvd.  
El Segundo, California 90245 USA  
(213) 679-4511

Xerox manufactures and markets a wide range of computers for scientific and business data processing. Their small computer is supported with extensive peripherals and software.

Established:	1906	
Revenue:	\$2,400 m	
Net Earnings (loss):	\$250 m	(12/72)
Offices:	Worldwide	
Sales:	N/A	

PRODUCTS include the 530 computer, plus the following peripheral devices: disks, magnetic tape, line printers, display terminals, paper tape and card equipment.

SOFTWARE support includes an Assembler, Macro assembler, FORTRAN IV and RPG compilers; real-time and real-time with batch processing monitors.

## XEROX 530

A general-purpose, real-time computer for scientific data processing, measurement, and control. Introduced in 1973, cost of an 8K system is \$20,000.

## FEATURES

- |                            |                   |
|----------------------------|-------------------|
| Upward compatible          | Microprogrammable |
| * Field Service            | Virtual Memory    |
| * Applications Software    | Multiprocessor    |
| Conversational Languages   | * Process Control |
| * Communications Processor | Time Sharing      |

## HARDWARE

- |                                       |                             |
|---------------------------------------|-----------------------------|
| Word size: 16 bits                    | Removable Disk: 25-200 mc   |
| Capacity: 8-65K core                  | Fixed Head Disk: 3 mc       |
| Cycle Time: .8 usec                   | MagTape: 60 kc (37.5 ips)   |
| Add Time: 1.92 usec                   | 120 kc (75 ips)             |
| Instructions <sup>1</sup> : AEM/BF    | Tape Cassettes: no          |
| Accumulators: 6                       | Paper Tape RD, PN: yes, yes |
| Index Registers: 6                    | Card RD, PN: yes, yes       |
| Communications <sup>2</sup> : M/ABDST | Line Printer: 350-1100 lpm  |
| Transfer Rate: 1.3 mc                 | Serial Printer: no          |
| CPU Features <sup>3</sup> : BCFIMP    | Display Terminal: yes       |
| Interface Slots: ?                    | Multiplexor: asyn, syn, A-D |

## SOFTWARE

- |                      |                       |
|----------------------|-----------------------|
| *Assembler 8K        | ALGOL                 |
| *Assembler, Macro 8K | APT                   |
| *FORTRAN 8K          |                       |
| BASIC, single user   | Disc Monitor          |
| BASIC, multi-user    | *Real Time Monitor 8K |
| COBOL                | Time Sharing Monitor  |
| *RPG 8K              | *Batch Monitor 8K     |
| PL1                  | Other:                |

<sup>1</sup> INSTRUCTIONS:

- A = Indirect Addressing  
 B = Byte Manipulation  
 D = Decimal Arithmetic  
 E = Extended Precision  
 F = Floating Point  
 M = Multiply, Divide  
 S = Stack Processing

<sup>2</sup> COMMUNICATIONS:

- A = Asynchronous  
 B = Bisynchronous  
 D = Direct Memory Access  
 M = Multipoint Memory  
 S = Selectable Line Speeds  
 T = Autodial

<sup>3</sup> CPU FEATURES

- B = Base Address Relocation  
 C = Real Time Clock  
 D = Dynamic Page Relocation  
 F = Power Fail Safe  
 I = Interrupt  
 M = Memory Protection  
 P = Memory Parity

Note: Standard feature if before slash, optional if after slash.

**PRICES**

# MINICOMPUTER REVIEW

PRICES i

The charts on the following pages show prices of a central processor with 4K memory and the teletype controllers and interfaces required to attach a teletypewriter device.

A price under the LARGER minimum system heading indicates that the minimum core memory of the system is greater than 4K. The minimum memory size follows the price.

# MINICOMPUTER REVIEW

PRICES 1

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
BENDIX		
BDX-6200	?	
BDX-9000	\$5,500	
BUSINESS COMPUTERS		
18	\$5,500	
CII		
15/20	\$13,000	
15/30	\$17,000	
CINCINNATI MILACRON		
CIP-2100	\$3,000	
CIP-2200	\$3,500	
COMPUTER AUTOMATION		
ALPHA 8	\$3,300	
ALPHA 16	\$4,050	
ALPHA LSI	\$2,350	
CONTROL DATA		
1700	\$20,000	
SC1700	\$15,900	
SYSTEM 17	\$13,500	
DATA GENERAL		
NOVA 800	\$6,950	
NOVA 820	\$6,450	
NOVA 840		\$16,880 (16K)
NOVA 1200	\$5,450	
NOVA 1210	\$4,350	
NOVA 1220	\$5,250	
NOVA 1230		\$7,450 (8K)
SUPERNOVA	\$9,600	
NOVA 2	\$4,150	
DATA CRAFT		
6024/1		\$51,750 (8K)
6024/3		\$33,150 (8K)
6024/4		\$20,250 (8K)
6024/5	\$12,850	

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
DATAPOINT		
2200 I	\$6,630	
2200 II	\$8,570	
DIGITAL COMPUTER CONTROLS		
D-112	\$3,760	
D-112H	\$4,265	
D-116	\$4,130	
D-116H	\$4,330	
DIGITAL EQUIPMENT		
PDP-8E	\$4,490	
PDP-8F	\$3,990	
PDP-11/05	\$4,795	
PDP-11/10		\$6,995 (8K)
PDP-11/15	\$6,200	
PDP-11/20	\$9,300	
PDP-11/40		\$12,995 (8K)
PDP-11/45	\$19,400	
PDP-12	\$15,900	
PDP-15	\$16,500	
DIGITAL SCIENTIFIC		
META 4	\$27,800	
ELECTRONIC PROCESSORS		
EPI-118	\$5,095	
EPI-218	\$3,990	
ELECTRONICS ASSOCIATES		
EAI PACER		\$15,200 (8K)
FOUR-PHASE		
IV/40		\$15,750 (8K)
IV/70	\$16,000	
FUJITSU		
MATE	\$14,600	
R	\$16,000	
R-E	?	
U-200	\$8,000	

# MINICOMPUTER REVIEW

PRICES 3

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
GENERAL AUTOMATION		
12/10	\$2,980	
12/15	\$3,480	
12/20	\$3,980	
16/40	\$5,500	
16/45	\$3,950	
16/60	\$6,550	
16/65	\$4,950	
16/80	\$8,550	
16/85	\$6,950	
18/30	\$21,500	
GRI		
99/30	\$5,000	
99/40	\$5,725	
GTE		
IS/1000	\$5,700	
HEWLETT-PACKARD		
2100 A	\$8,050	
2100 S		\$16,000 (16K)
HITACHI		
10-II	\$8,000	
HOKUSHIN		
700	\$22,000	
HONEYWELL		
H316	\$8,400	
H516	\$23,800	
716	\$12,265	
IBM		
SYSTEM/7	\$18,600	
INTEL		
INTELLEC-4	\$2,195	
INTELLEC-8	\$2,395	

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
INTERDATA		
50	\$6,800	
70	\$6,800	
74	\$3,950	
80		\$14,900 (8K)
85		\$22,800 (8K)
7/16	\$3,550	
7/32	\$10,300	
LABEN		
70	\$12,200	
701	\$9,400	
LINOLEX		
MODEL A	\$9,900	
LOCKHEED		
MAC 16	\$9,800	
MAC JR	\$6,500	
SUE	\$5,080	
MATSUSHITA		
7/F	?	
7/S	?	
MICRODATA		
400/10	\$3,450	
1600	\$4,475	
1600/21	\$5,025	
1600/30	\$6,075	
1600/40		\$6,900 (8K)
1600/60	\$10,575	
3200	\$8,000	
3230		\$8,450 (8K)
32/S	\$9,450	
MITSUBISHI		
70	\$16,000	
350/7F	\$30,000	

# MINICOMPUTER REVIEW

PRICES 5

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
MODULAR		
I	\$4,900	
II	\$8,000	
III	\$11,050	
IV/10		\$20,100 (16K)
IV/25		\$25,100 (16K)
NIPPON		
3200/30	?	
3200/50		?
NORSK		
1	\$600/mo	
20	\$300/mo	
OMNUS		
1	\$8,500	
PHILIPS		
850	\$4,600	
855	\$5,030	
860	\$5,030	
PRIME		
100	\$4,600	
200	\$5,900	
300		\$12,500 (8K)
QUANTEL		
ANSWER	\$12,300	
RAYTHEON		
704	\$7,200	
ROLM		
1601	\$15,250	
1602	\$19,000	
SIEMENS		
301	\$580/mo	(1K)

## 6 PRICES

GML

MINICOMPUTER MODEL	MINIMUM SYSTEM PRICE	
	4K	LARGER
SYSTEMS		
72		\$20,000 (8K)
85		\$82,500 (8K)
86		\$106,500 (8K)
TELEMECANIQUE		
1600	?	
2000/10	?	
2000/20	?	
TEXAS INSTRUMENTS		
960A	\$3,300	
980A	\$3,925	
TOSHIBA		
10	\$10,000	
10E		\$8,000 (8K)
40		\$16,000 (8K)
3000	\$30,000	
VARIAN DATA		
73	\$13,000	
620/F-100	\$11,100	
620/L	\$6,000	
620/L-100	\$6,000	
WESTINGHOUSE		
2500	\$10,450	
XEROX		
530		\$20,000 (8K)

