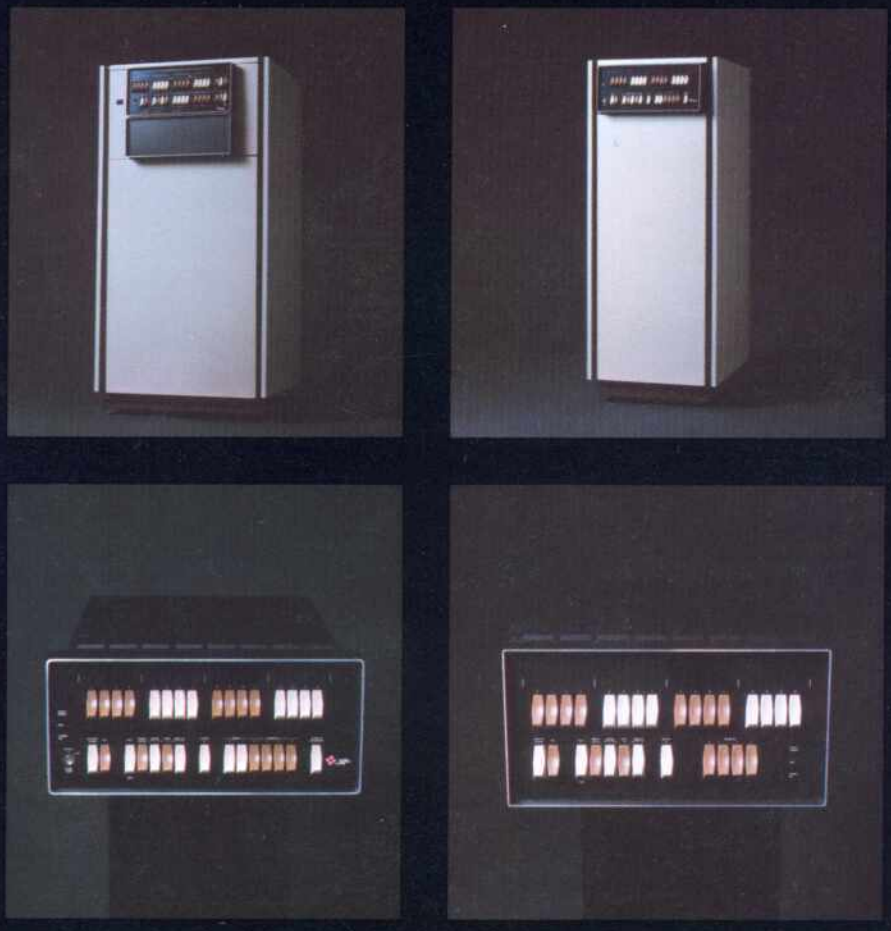
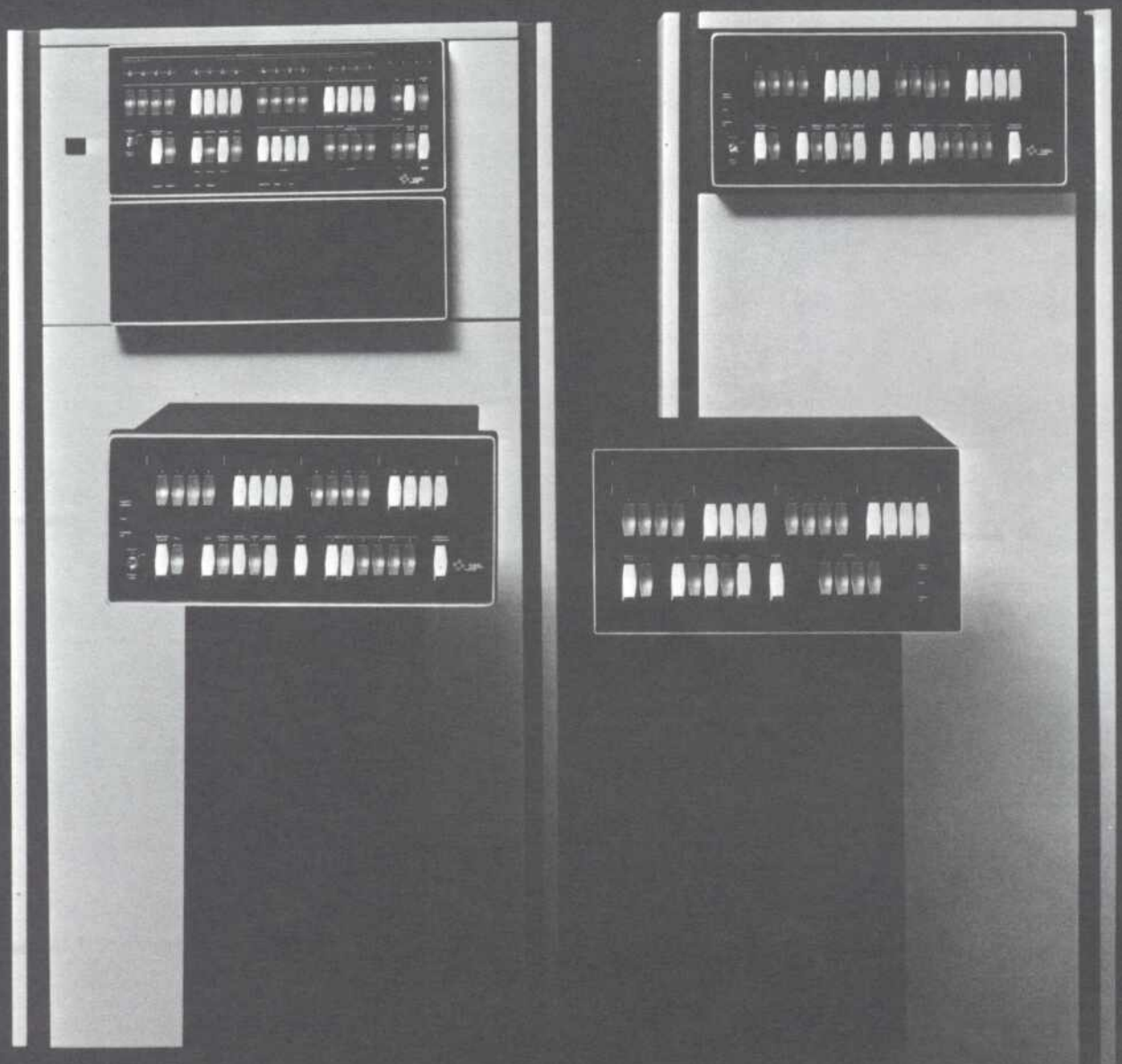
MODCOMP FAMILY



MODCOMP



MODCOMP MAKES THE TOOLS

Modular Computer Systems, Inc., or "MODCOMP" as the marketplace has come to call us, is a real-time computer systems company. We specialize in offering all of the hardware and software tools needed for:

Measurement and Control
Communications
Local and Remote Information Processing

End users and turn-key system suppliers can select a set of MODCOMP tools matched to almost any requirement in these application areas. With a complete and compatible set of tools, including higher-level language and operating system support for all hardware, the user can concentrate on his application and get on-line in minimum time.

MODCOMP TOOLS INCLUDE

A compatible Family of Computers

- MODCOMP I – A 16-bit computer for dedicated applications
- MODCOMP II – A large 16-bit computer for real-time multiprogramming applications
- MODCOMP II CP – A communications processor capable of throughput rates up to 200K bytes per second
- MODCOMP IV – A 32-bit computer with hardware innovations which reduce operating system overhead to a new minimum

Multiple Layers of Software

A Choice of Multiprogramming Systems

- MAX I – For multi-task handling in small systems (MODCOMP I and II).
- MAX II/III – For multi-task handling and batch processing in systems having up to 64K words of memory (MODCOMP II and IV)
- MAX IV – For the most demanding combinations of real time and multi-user applications (MODCOMP IV).

A Choice in Programming Approach

- FORTRAN IV with code optimization and real-time extensions
- Macro assembler which can be used in-line with FORTRAN
- Dartmouth BASIC
- Fill in the blanks process control language

Utility Software including editors, application subroutine libraries, sort/merge, plotting packages, and linear programming package.

Communications Software

- MAXCOM – An executive designed expressly for high throughput communications applications (MODCOMP II and IICP).
- Terminal Emulators – 2780, HASP, 200UT and 1004 packages.

Network Software

MAXNET is a field proven operating system providing distributing computing capability to networks of MODCOMP computers.

Real-Time Peripherals

MODCOMP designs and builds interface equipment which can handle virtually all types of analog inputs, analog outputs, digital inputs and digital outputs.

Communications Interfaces

A comprehensive array of line interface units and multiplexers are available for servicing from one to 256 lines.

Data Processing Peripherals

A broad range of paper tape, magnetic tape, disc, printer, display and punched card equipment is offered with MODCOMP computers. And MODCOMP software supports all peripherals offered.

Host Processor Interfaces

Standard product interfaces for IBM 360/370 and CDC 3000/6000 series computers.

Custom Engineering and Programming

MODCOMP has system engineers and application programmers for developing special interfaces, terminals and programs to expand system capabilities.

The MODCOMP Computer Family
Upper Left – MODCOMP IV, All Models
Upper Right – MODCOMP II, Models 20 to 45CP
Lower Left – MODCOMP II, Models 5 to 19
Lower Right – MODCOMP I, All Models

MODCOMP HAS DELIVERED

MODCOMP Computer Systems are now being used in hundreds of different control and communication applications. Representative applications of existing installations are listed below.

Communications
- Front End Processing
- Local and Remote Concentration
- Multi-Computer Networks
- Remote Job Entry
- Telemetry System Control
- Order Entry
- On-Line Inquiry
- Remote Data Collection
- Time Sharing Networks

Laboratory Measurement and Control
- Main-Machine Interaction Studies
- Experimental Apparatus Control
- Growth Environment Control
- Reactor Control
- Analytic Instrument Control
- High Energy Accelerator Control
- Radio Telescope Control
- Scheduling, Loading and Data Collection from Satellite Computers

Energy Generation, Control and Monitoring
- Electric Power Generation Control
- Electric Power Demand Control
- Remote Dam Control
- Pipeline Control
- Electric Power Distribution Control

Industrial Control, Monitoring and Testing
- Process Control – Chemicals, Petrochemicals, Metals
- Loom Monitoring – Textiles
- Furnace Control – Metals
- Manufacturing Parts Testing – Automotive
- Engine Test Stand Control – Aircraft
- Pot Line Control – Aluminum
- Packaging Control and Monitoring – Beverage
- Machine Control – Welding, Milling and Finishing
- Food Processing Control

Miscellaneous Measurement and Control
- Building Automation
- City Traffic Control
- Airport Vehicle Control
- Post Office Scheduling and Control
- Coin Collection Monitoring

Information Processing
- Space Data Reduction
- Inventory Control
- Medical Waveform Analysis
- Report Generation and Plotting
- University Student FORTRAN Computations
- Seismic Data Reduction
- General Accounting Systems
- Scientific and Engineering Analysis
- Hospital Information Systems

1

4

2

5

7

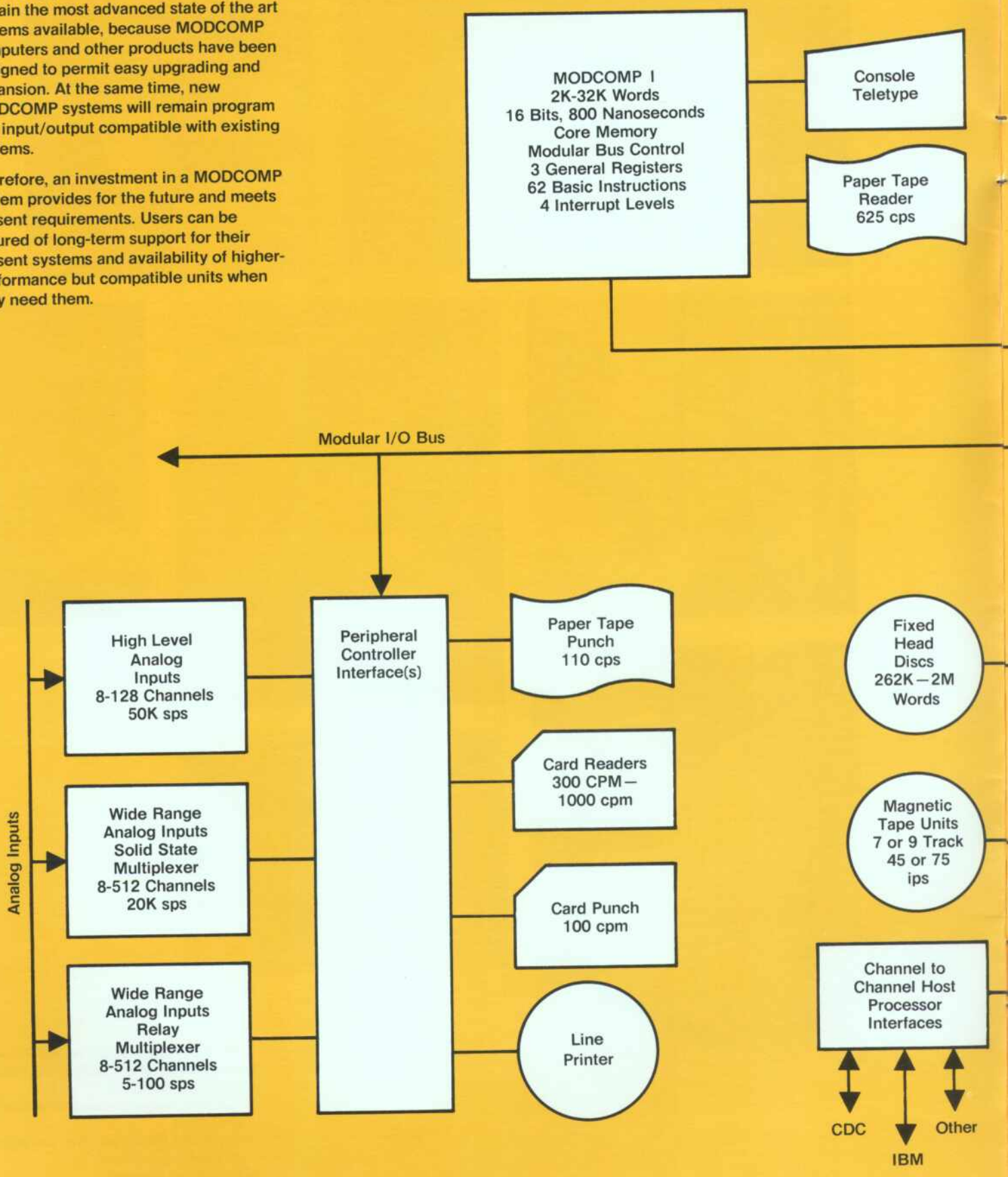
3

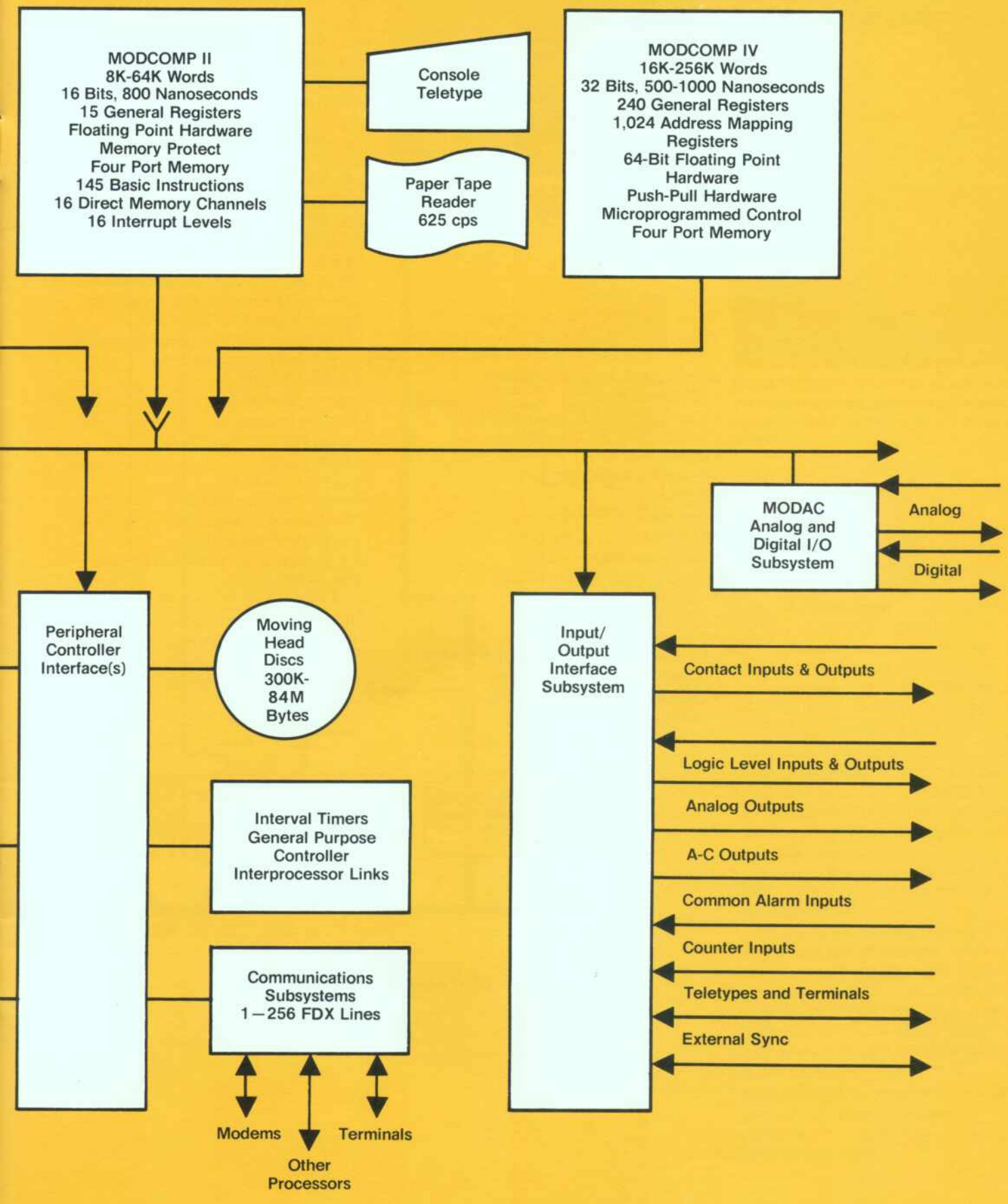
6

1. Telemetry Data Acquisition and Processing
2. Hospital Instrument Control and Patient Records Processing
3. 128-line, fully redundant IBM 360 front end processor
4. Computer center services and software development (Japan)
5. Agricultural Research
6. OEM Software Development Center
7. Antenna Positioning and Control

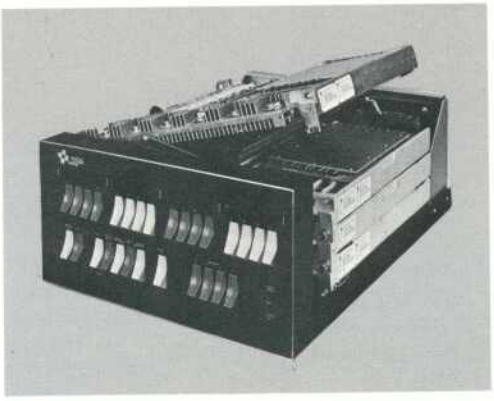
The over-all block diagram at right summarizes the MODCOMP family of compatible system building blocks. The hardware modularity permits MODCOMP systems to remain the most advanced state of the art systems available, because MODCOMP computers and other products have been designed to permit easy upgrading and expansion. At the same time, new MODCOMP systems will remain program and input/output compatible with existing systems.

Therefore, an investment in a MODCOMP system provides for the future and meets present requirements. Users can be assured of long-term support for their present systems and availability of higher-performance but compatible units when they need them.




MODCOMP II
8K-64K Words
16 Bits, 800 Nanoseconds
15 General Registers
Floating Point Hardware
Memory Protect
Four Port Memory
145 Basic Instructions
16 Direct Memory Channels
16 Interrupt Levels
Console Teletype
Paper Tape Reader 625 cps
MODCOMP IV
16K-256K Words
32 Bits, 500-1000 Nanoseconds
240 General Registers
1,024 Address Mapping Registers
64-Bit Floating Point Hardware
Push-Pull Hardware
Microprogrammed Control
Four Port Memory
MODAC Analog and Digital I/O Subsystem
Analog
Digital
Peripheral Controller Interface(s)
Moving Head Discs 300K-84M Bytes
Interval Timers
General Purpose Controller
Interprocessor Links
Communications Subsystems 1—256 FDX Lines
Modems
Terminals
Other Processors
Input/ Output Interface Subsystem
Contact Inputs & Outputs
Logic Level Inputs & Outputs
Analog Outputs
A-C Outputs
Common Alarm Inputs
Counter Inputs
Teletypes and Terminals
External Sync

MODCOMP I AND II COMPUTERS



The MODCOMP I can contain all options and 32K words of memory on the four hinged planes shown.

MODCOMP I

This smallest MODCOMP computer is intended for dedicated data collection, processing and control applications. It offers many standard and optional features:

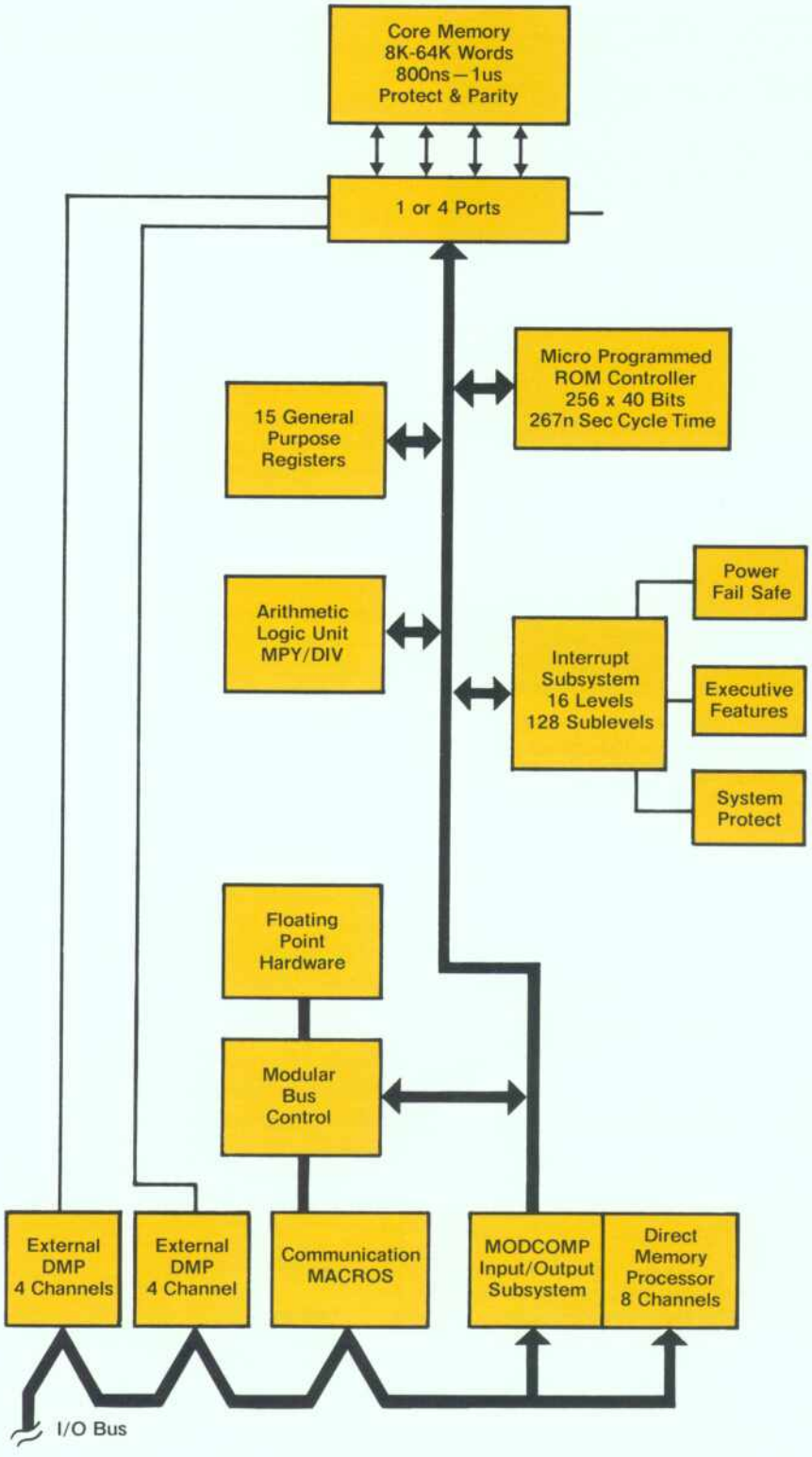
- 16-Bit Word Length
- 800 Nanosecond Cycle Time
- 2-32K Words of Core Memory
- Memory Parity
- Power Fail Safe/Auto Start
- Hardware Fill
- Hardware Multiply/Divide
- 8 Direct Memory Channels
- Real Time Clock – 1 msec.
- Optional Programmer's Panel
- 3 General Registers
- 4 Interrupt Levels
- 128 Interrupt Sublevels
- Modular Bus Control – External Control Capability For All Machine Resources
- Upward Program Compatibility With MODCOMP II and IV

MODCOMP II

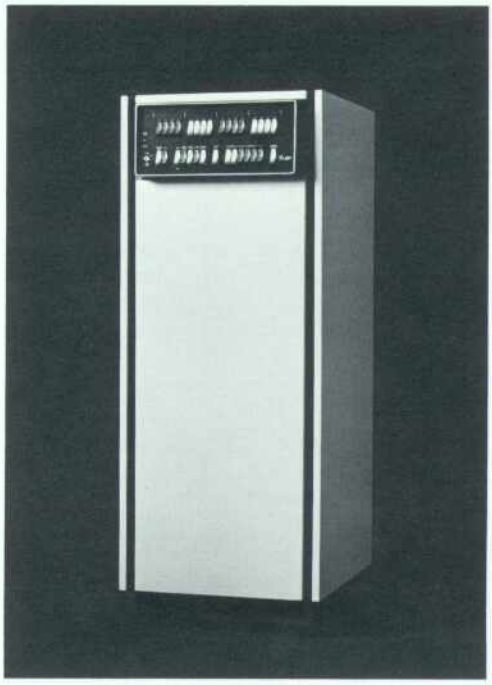
This intermediate member of the MODCOMP computer family is designed for efficient real-time system operation, particularly in applications that can take advantage of the software capabilities of the MAX III Real-Time Executive. The MODCOMP II offers all of the hardware features required by an advanced software system plus high speed integer and floating point arithmetic hardware, bit and byte manipulation, and a flexible I/O system. It is available in several different models which, collectively, offer:

- 16-Bit Word Length
- 8-64K Words of Core Memory
- All Memory Directly Addressable
- Choice of Memory Modules

  WORD CAPACITY CYCLE TIME
  8K or 16K – 800 nanoseconds
  One 32K Module – 1.067 u seconds
  Two 32K Modules – 850 n sec
  (Effective cycle time due to interleaving)
- 15 General Purpose Registers
- Four Port Memory
- Memory Parity
- Memory Protect
- Power Fail Safe/Auto Start
- Hardware Fill
- Console Interrupt
- Panel Protect Keyswitch
- Hardware Multiply/Divide
- Hardware Floating Point
- Bit, Byte, Word, Doubleword and File Manipulation
- 174 Instructions
- 16 Direct Memory Channels
- Real-Time Clock – 5 msec.
- 16 Priority Interrupt Levels
- 128 Interrupt Sublevels



MODCOMP II ORGANIZATION



The MODCOMP II can contain all options including the communications processor plane plus 64K words of memory in the upper half of the cabinet shown.

MODCOMP II COMMUNICATIONS PROCESSOR

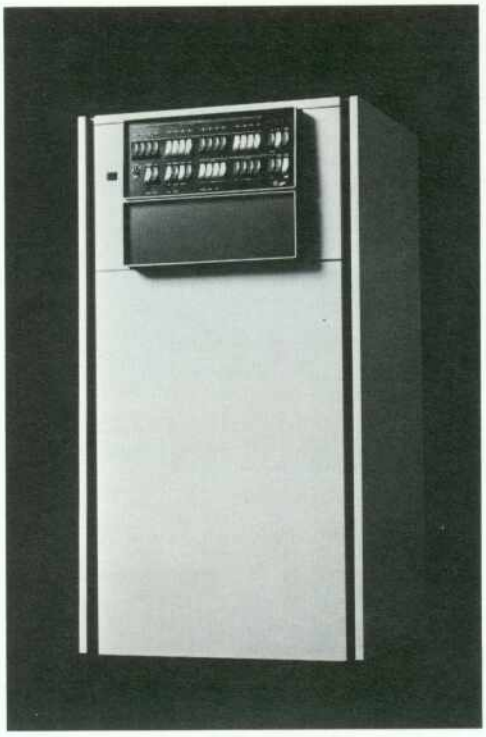
Take a MODCOMP II, add specialized communication macro instructions implemented by firmware, plus the direct memory interface to the Universal Communications Subsystem, and you have a MODCOMP II Communication Processor. In addition to the standard MODCOMP II features, the CP using special macros enables the user to maximize the efficiency of data stream processing. Typical of the macro capabilities are:

- Byte string move core to core
- Byte string character search and discard
- Automatic character replacement
- Byte string search for up to 8 program selectable characters with automatic subroutine exit upon detection
- Generation and accumulation of CRC_{12}, CRC_{16}, and LRC with no additional cost in execution time.
- Pack or unpack a byte string as it is moved
- Translate a byte string as an option with any of the preceding at 800ns per character

Interfacing to the Universal Communications Subsystem adds the capability to multiplex data to and from up to 256 full duplex communications lines (per controller) directly to and from memory.

Data transfers may occur on a cycle stealing basis without program intervention. This subsystem interfaces to both synchronous and asynchronous lines.

MODCOMP IV 32-BIT COMPUTER



The MODCOMP IV can contain all options and up to 256K bytes of memory in the cabinet shown. A second cabinet containing an additional 256K bytes can be added.

MODCOMP IV is the highest-performance member of the compatible MODCOMP computer family. MODCOMP IV offers even faster bit, byte and 16-bit word processing capabilities than the smaller family members and, in addition, it offers:

- Fast 32-bit integer processing
- Fast 32, 48, and 64 bit floating point arithmetic processing
- Extensive hardware additions to increase multiprogramming/multiuser capabilities including:
  - 240 general purpose registers organized into 16 switchable banks of 15 registers each
  - 1,024 address mapping registers organized into seven switchable map files
  - Memory allocation/deallocation hardware

The 512K bytes of memory are addressed by a page mapping scheme which features:

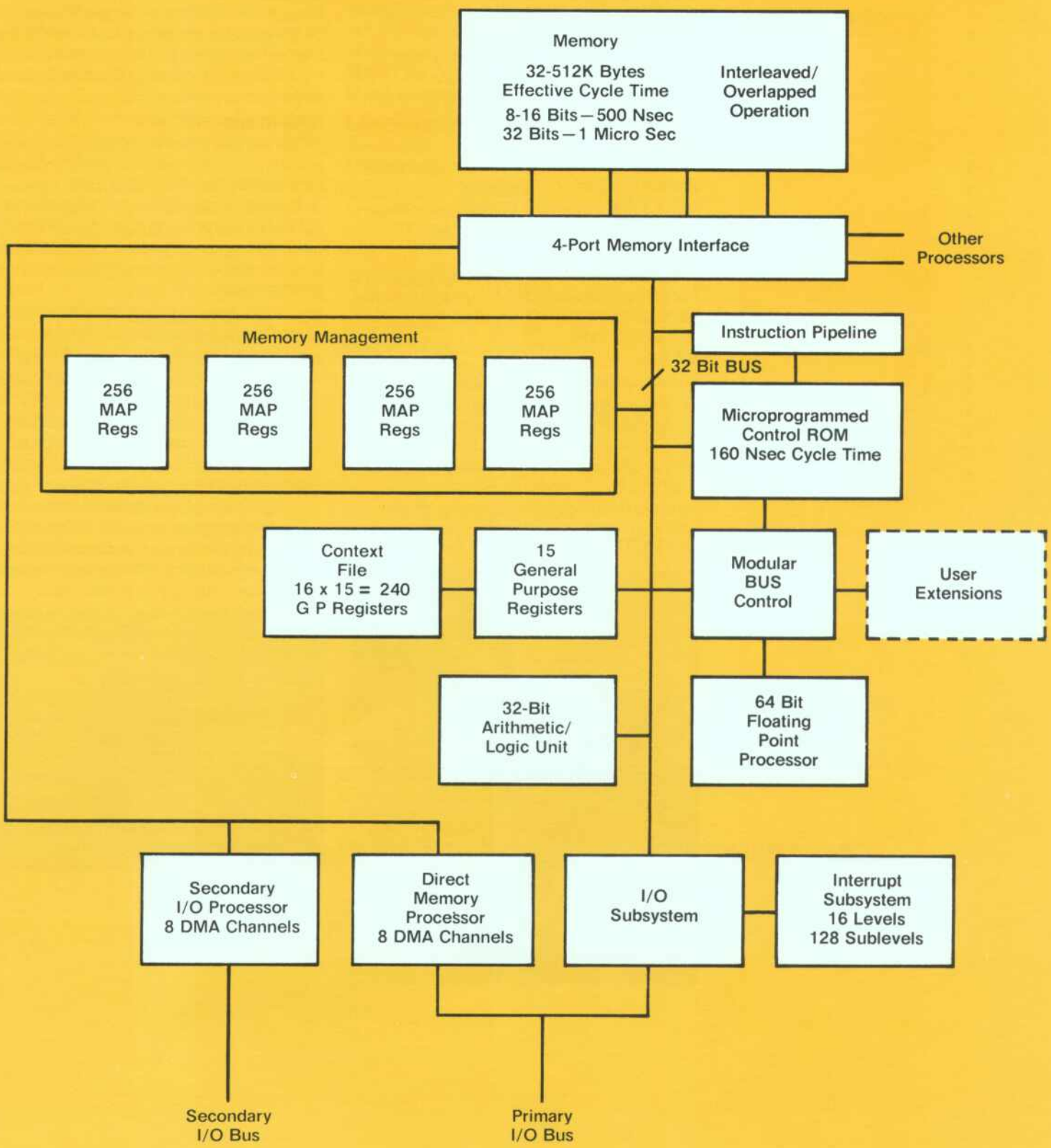
- 512-byte page size for efficient memory utilization
- 1,024 memory pages (maximum)
- Capability to allocate non-contiguous pages to programs
- Hardware relocation for fast roll in/roll out operations
- Multiple mapping register files to enable fast context switching between the MAX IV operating system and up to six user programs.

The page mapping scheme, memory allocation/deallocation hardware, 16 switchable general purpose register banks, and the capability to load programs directly from disc into non-contiguous memory pages provide the MODCOMP IV with unmatched capabilities in handling dynamic task and user environments.

High speed task execution is performed by accessing instructions from memory at maximum memory speed into a pipeline buffer and by executing instructions from the pipeline in as little as 320 nanoseconds. The CPU execution cycle time is 160 nanoseconds, which is determined by the cycle time of the microprogrammed execution control ROM.

Many other features contribute to the high performance capabilities of the MODCOMP IV:

- Simultaneous I/O and Computation
- 3.0 Microsecond Context Switching Time
- Four-level Memory Protect Assignable to Each 512 Byte Page
- Interleaved/Overlapped Memory Operation
- Stack Processing Hardware
- Fast Floating Point Hardware
  Total Fetch and Execution Time for a 64 Bit Floating Point Multiply is 8.0 Microseconds
- 2.4 Million Bytes per second I/O Rate
- Capability to Add Microprogrammed User Extensions
- Program and I/O compatible with MODCOMP I and II



MODCOMP IV ORGANIZATION

MODCOMP SOFTWARE

The software available with MODCOMP computers is comparable in scope and capabilities to that previously available only with large mainframes. The wide range of operating systems, language processors and support software is illustrated in the table on the opposite page.

Much of this software, including the MAX III Real Time Operating System for the MODCOMP II has been operating in the field since Mid-1971 and has been field proven in hundreds of installations.

The New MODCOMP IV software is an extension and upgrading of the field proven MODCOMP II software. In addition to being more efficient on the larger computer it is upward compatible.

The highlights of the MODCOMP Modular Application Executive (MAX) systems are listed below, except for MAXNET, which is described on the next page.

MAX I

This small, real-time operating system is used for controlling and scheduling the activation of core resident programs in a multiprogramming environment. It permits the user to develop a tailored application system in assembly language that controls, processes and/or acquires data. It operates in configurations having 4K or more words of memory.

MAX II

This disc operating system is used primarily in batch processing environments. It supports all of the MODCOMP language processors and support software. It offers real-time extensions in that real-time, core-resident tasks can be added to the system and executed at a priority higher than that of the batch processing job stream. It operates in systems having 16K words or more.

MAX III and MAX IV

These are task oriented multiprogramming operating systems which support large real-time, batch processing, and multi-user applications. MAX IV extends the capabilities of MAX III by using the multiple register files, memory mapping, hardware allocation/deallocation, and virtual memory features of the MODCOMP IV.

Some of the principle features of MAX III and MAX IV are listed below.

- An execution control routine called the Taskmaster multiplexes CPU time between tasks executing independently at up to 256 unique software priority levels. Tasks executing at the same priority level do so on a cyclic basis.
- Tasks may be executed in either a privileged or unprivileged CPU mode.
- The context switching of the Taskmaster is caused by events such as the completion of a delayed service or I/O operation, directly-connected interrupt, or another task.
- Tasks can be scheduled, started, suspended, resumed, or terminated by operator directives, timers, directly connected interrupts, I/O handlers, or other tasks.
- The I/O system supports all standard MODCOMP peripheral devices which are addressed indirectly via device independent logical files.
- Optional spooling tasks and special purpose symbionts may be used to buffer slow devices to/from disc files and to simulate special device characteristics.

- A real-time clock provides several types of timers for use by tasks. These include delay timers, task scheduling timers, watchdog timers, and CPU utilization counters.
- The system loader under MAX IV loads tasks and overlay segments from disc in an absolute format. The use of memory mapping by these tasks provides total hardware relocation and fast loading capabilities.
- The system core allocation under MAX IV is implemented with special hardware instructions which can allocate core pages quickly and efficiently.
- The capability for non-continuous memory page allocation reduces fragmentation problems and core requirements under MAX IV.

MAXCOM

This executive is designed to handle a wide range of communication system applications including message switching, line concentration and front end processing. It provides:

- A low overhead program switching mechanism which enables high throughput rates to be achieved.
- A flexible set of services including input/output, timing, task activation, queue manipulation, memory management, and a variety of user support services and debug facilities.
- Standard physical device handlers.
- Computer-to-computer protocol.
- Operator directives for controlling both tasks and the physical resources of the system.

MODCOMP SOFTWARE	MODCOMP I	MODCOMP II	MODCOMP IV
OPERATING SYSTEMS			
MAX I Core Resident System	X	X	
MAX II Disc Operating System		X	X
MAX III Real-Time System		X	X
MAX IV Real-Time System			X
MAXCOM Communications Executive		X	
MAXNET Network Operating System		X	X
LANGUAGE PROCESSORS			
Assembler	X	X	
Macro Assembler		X	X
360/370 and CDC 6000	X	X	X
Cross Assemblers for MODCOMP I	X	X	X
FORTRAN IV Compiler		X	X
BASIC		X	X
SUPPORT SOFTWARE			
File Management System		X	X
Sort/Merge		X	X
Source Editor	X	X	X
Link Editor		X	X
Link Loader	X	X	X
Source/Object/Load Module Cataloger		X	X
Program Development Utility Procedures		X	X
Math Library		X	X
Reentrant FORTRAN Run-Time Package		X	X
Plotting Package		X	X
Scientific Subroutine Library		X	X
COMMUNICATIONS APPLICATION PACKAGES			
HASP Workstation		X	X
IBM 2780 Emulator		X	X
CDC 200 UT Emulator		X	X
Univac 1004 Emulator		X	X
Bisync Communications		X	X
Remote Fill from Host CPU	X	X	
MEASUREMENT AND CONTROL APPLICATION PACKAGES			
Purdue Process Control Workshop Extensions to FORTRAN IV		X	X
Linear Programming		X	X
COMMERCIAL APPLICATION PACKAGES			
Commercial Subroutine Library		X	X
Decimal Simulation Instructions		X	X
DIAGNOSTICS FOR COMPUTERS, PERIPHERALS AND INTERFACES	X	X	X

MAXNET NETWORK OPERATING SYSTEM

DISTRIBUTED COMPUTING POWER

MAXNET is an operating system which provides a new dimension to the use of MODCOMP computers. MAXNET enables any number of MODCOMP II and IV computers to be connected into a network, sharing system resources and distributing the system computing load. And the network communication and control services are easy to use in FORTRAN or assembly language programs.

A MAXNET operating system can be tailored by standard Sysgen procedures to meet the requirements and environment of each MODCOMP computer in a distributed computing network having one or more host processors, any number of satellite processors, and intermediate level processors, if required.

Representative functions which can be performed by the major classes of processors include:

Host Processors

- Downline program loading
- Remote task execution control
- Receipt and processing of satellite data
- Storage and handling of programs and data files for all network computers
- Compilation, assembly, listing, editing and debugging of programs for all network computers
- Supervisory control of satellites
- Communication with non–MODCOMP computers

Attended Satellites

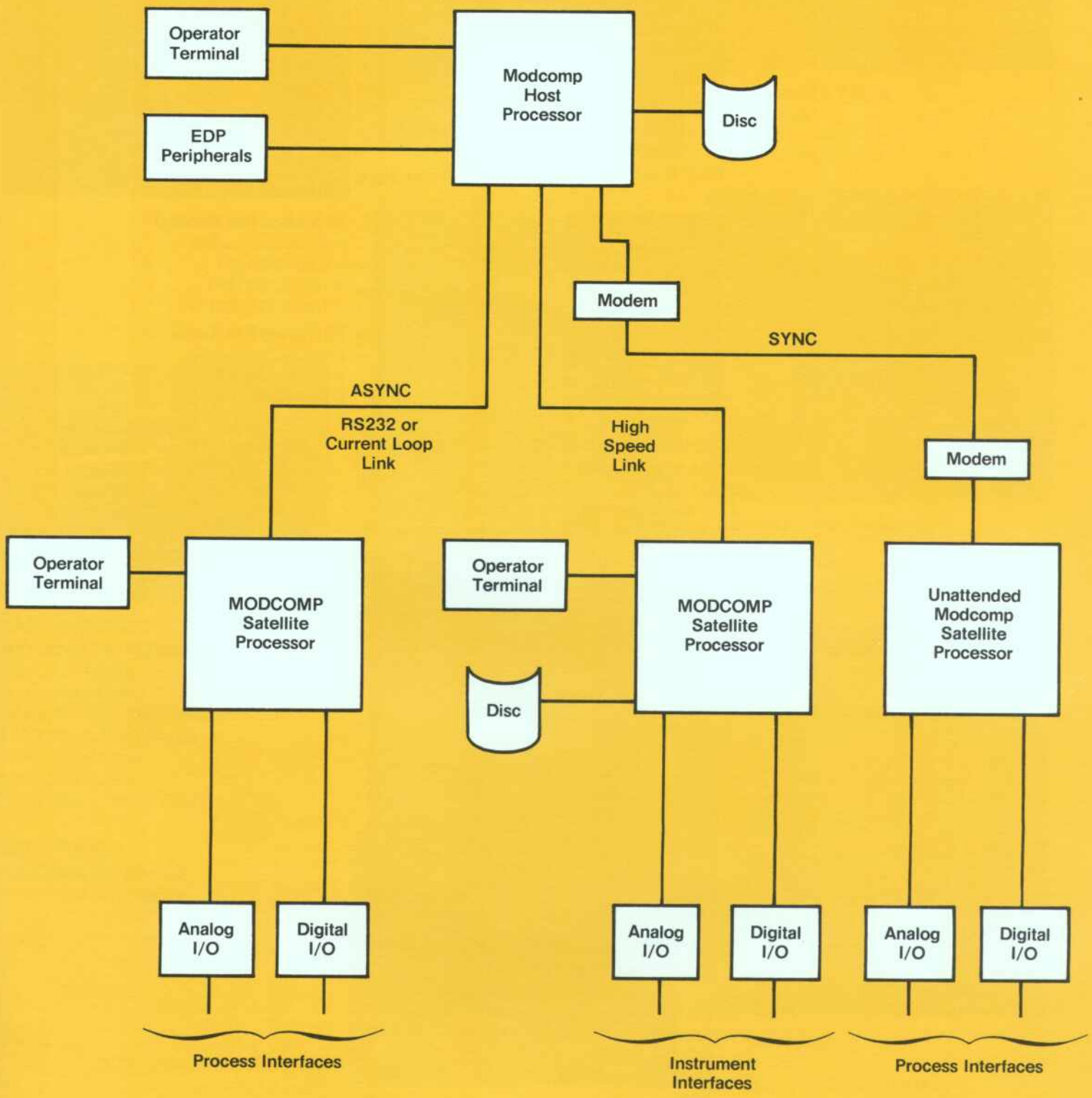
- Local data acquisition and process or experiment control
- Remote job entry to host processor
- Operator request for program and data files stored at host processor
- Preprocessing and transfer of data to host for further processing, printing and storage
- Local program compilation, assembly, editing and execution using language processors obtained from host and sending listing outputs to the host for printing.

Unattended Satellites

- Program loading from host
- Local data acquisition and process or experiment control
- Processing and transfer of data to host for further processing, printing and storage

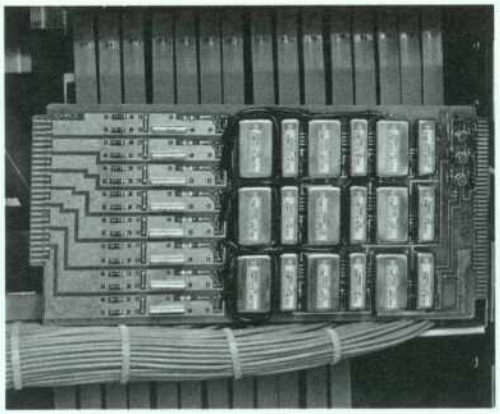
These network capabilities provide many advantages to the user when compared to the use of either a single large processor or a number of independent small computers:

- RELIABILITY – Due to redundant computers and communication links
- ECONOMY – Satellites can use host peripherals
  Signal cables to satellites can be short
- LOCAL CONTROL and computing capabilities at satellites
- FAST LOCAL RESPONSE
- COMPLETE HOST CONTROL and downline program loading to satellites
- EASY EXPANDABILITY by addition of satellites
- SIMPLE FORTRAN STATEMENTS and operator commands are provided to handle all communication and control facilities.



MAXNET HOST AND TYPICAL SATELLITES

PROCESS INTERFACES

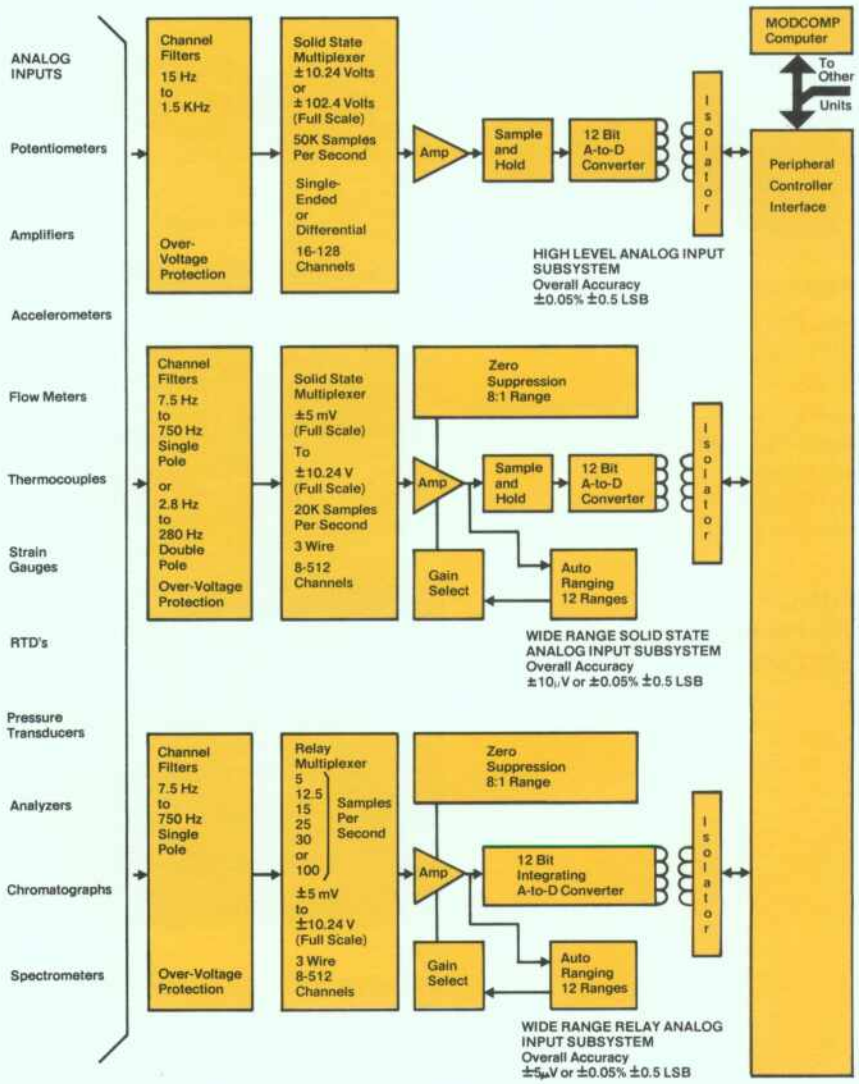


Two Wide-Range Relay Multiplexer Chassis showing eight-channel multiplexer card in front of the front-edge card connectors. The signal cables are shown below the multiplexer card.

MODCOMP process interfaces can handle almost any measurement or control job in plant, laboratory, or other facility. MODCOMP process interfaces are designed, manufactured, serviced and fully software supported by MODCOMP, resulting in total system capability from a single source.

THREE ANALOG INPUT SUBSYSTEMS

A choice of three analog input subsystems is available to handle a wide variety of signal levels and sampling rates. The High Level Analog Input Subsystem provides sampling rates up to 50K SPS for 10 volt or 100 volt full scale signals. The Wide Range Solid State Analog Input Subsystem offers 12 programmable gain ranges for full scale inputs from 5 millvolts to 10 volts. It offers automatic gain ranging and zero suppression to produce resolutions up to 15 bits. The Wide Range Relay Analog Input System offers all of the features of the solid state subsystem, except the 20K SPS sampling rate and, in addition, it offers high common mode voltage capability. The standard unit can handle ± 200 volts peak, and an option for ± 500 volts peak is available. All subsystems provide d-c isolation to eliminate grounding problems between process and computer systems.



INPUT/OUTPUT INTERFACE SUBSYSTEMS

This flexible unit can be connected to almost any combination of digital and contact inputs and outputs. It also handles analog outputs and line interfaces for asynchronous communication terminals such as CRT's, loggers, and typewriters.

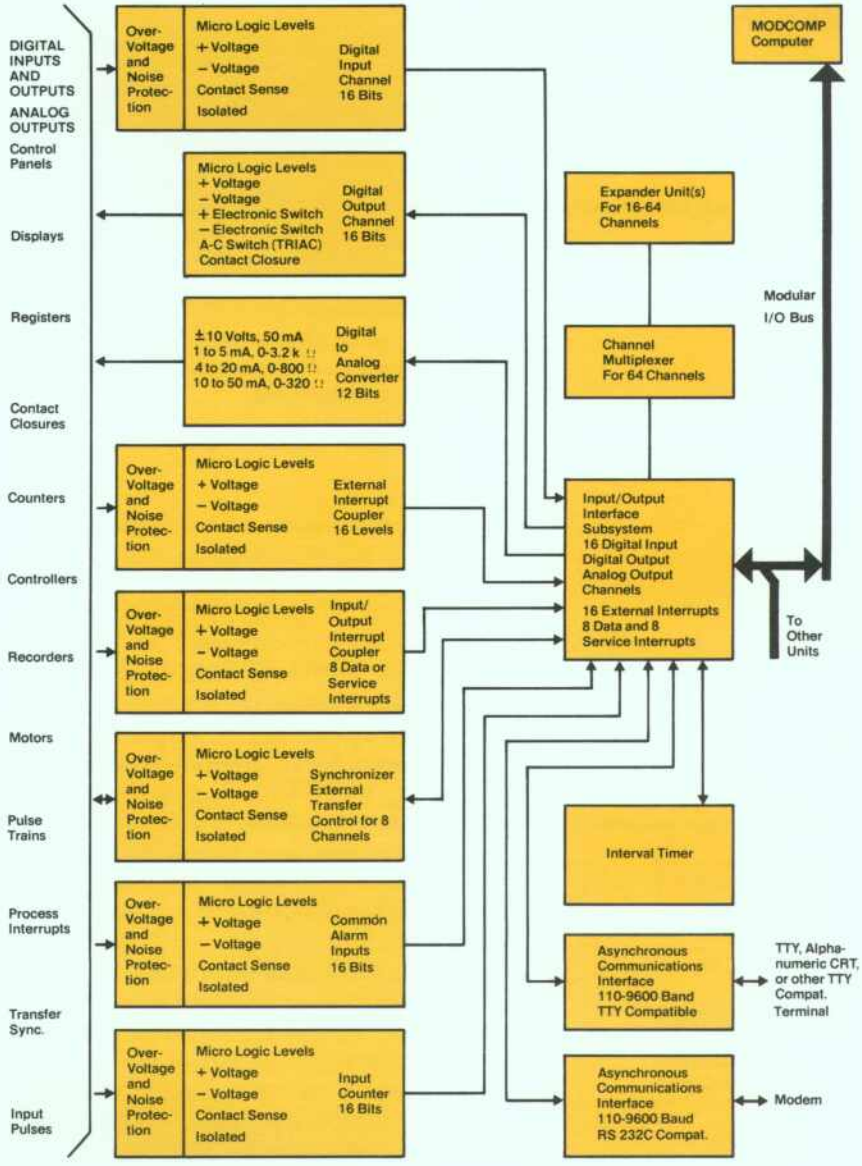
The basic IOIS unit can contain up to 16 channels. Each channel can consist of 16 digital inputs or outputs, two analog outputs, or a communication terminal interface. Channel multiplexers are available which enable up to 64 subchannels, of 16 bits each, to be multiplexed at each of the 16 basic channel positions. Therefore, the total capacity meets virtually all system requirements.

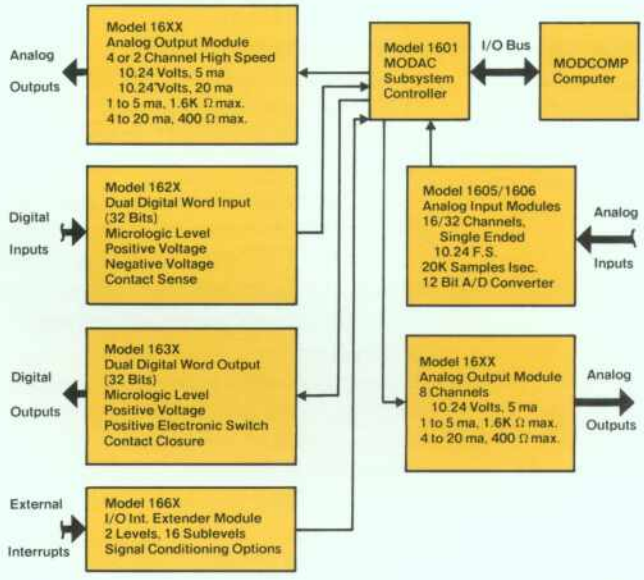
MODAC

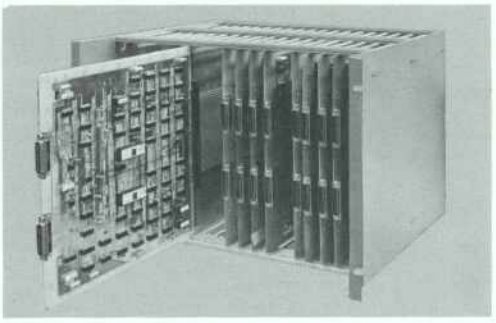
This subsystem is designed for small requirements. It consists of a MODCOMP computer interface and one to seven modules in an 8¾ inch high package. Each module provides 16 or 32 analog inputs; 2, 4 or 8 analog outputs; or 32 digital inputs or outputs. A variety of signal conditioning options are available for both digital and analog signals.

REMAC

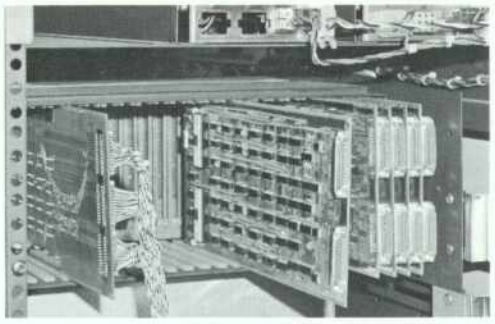
A serial link is available which enables MODAC and Input Output Interface Subsystems to be located up to one mile from a MODCOMP computer. The remote controller can be contained in the MODAC unit. Coaxial cables, not requiring modems, are used for the communication lines. Communication rates up to 16K words per second are achieved.







Universal Communications Multiplexer Chassis showing a Synchronous Dual Line Interface Module extended.



Asynchronous Communications Multiplexer Chassis showing a Dual Async Channel Card extended.

MULTIPLEXERS AND LINE INTERFACES

Communications Interfaces

MODCOMP offers a comprehensive line of communications interfaces, available as single and dual channel controllers for systems requiring a minimum number of lines. Multiline controllers are available for applications requiring a large number of synchronous and/or asynchronous lines.

Computer to Computer Links

MODCOMP offers both serial and parallel interprocessor links enabling high speed data transfer between MODCOMP systems. Both links operates under control of the Direct Memory Processor at data rates up to 150K words per second.

Dual Channel Interfaces

Dual channel interfaces are available for both synchronous and asynchronous modes of transmission. Each dual channel interface provides two full duplex line interfaces, mounted in a standard MODCOMP peripheral controller interface. Major line protocol characteristics are modifiable via program commands thereby increasing the utility of the channel interfaces. Standard features include:

- 75-9600 Baud
- 5, 6, 7, 8 Bit Frame Size
- 1 and 2 Stop Bits
- Character Parity Generation and Checking
- Double Character Buffering
- RS232 and/or Current Loop Interfaces

Remote Fill

MODCOMP also offers single channel controllers, for use in remotely connected processors, which provide the ability to detect and initiate a program load from a host processor.

Asynchronous Communications Subsystem

The asynchronous subsystem provides a cost effective means of interfacing a large number of low to medium speed asynchronous lines. This subsystem provides for control of up to 128 half or full duplex lines. Standard features include:

- 2-128 Lines per Controller
- 75-9600 Baud
- Multiple Line Speeds per Controller
- RS232 and Current Loop Interfaces

UNIVERSAL COMMUNICATIONS SUBSYSTEM

The Universal Communications Subsystem offers the highest thruput capability and flexibility by providing direct memory (block) transfer to and from both synchronous and asynchronous communication lines. The flexibility is further enhanced by the programmable features of the subsystem which include:

- Detection of character sequences during block transfers
- Up to 16 selectable baud rates
- Variable frame size
- Odd, even or no character parity
- Selectable sync characters
- Split full duplex speeds
- Reverse channel
- Dual port multiplexers
- Async to 19.2K baud
- Sync to 230.4K baud
- 2-256 FDX lines

The high thruput achievable with the Universal and its flexibility make it ideally suited for front-end, concentrators and large message switching applications.

HOST PROCESSOR INTERFACES

As standard products MODCOMP offers direct channel parallel interfaces to IBM 360/370 and CDC 3000/6000 series computers. These interfaces are supported under the MAXCOM communications executive at transfer rates up to 1.25 million bytes per second.

REMOTE BATCH SYSTEM

MODCOMP offers standard batch terminal emulator systems for IBM, CDC, and Univac central processors. All emulators are designed and implemented with the capability to be run as a single task in a multitask environment. This capability enables local assemblies, FORTRAN compilations, and real-time task executions to occur simultaneously with remote job entry to a large host processor.

APPLICATIONS

Universal Communications Subsystem

Primarily used in dedicated communications applications, the Universal Communication Subsystem offers the flexibility to implement the classical communications applications:

- Front End Processing
- Message Switching
- Remote Concentration
- On-Line Inquiry

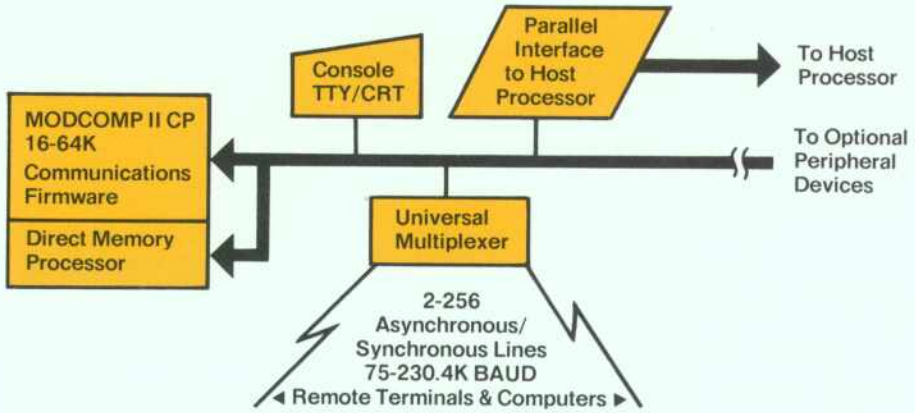
The ability to mix line speeds and protocols, frame sizes and parity offer the basis to simultaneously interface a wide variety of terminals and line types, facilitating the implementation of any application. Operating through the Direct Memory Processor provides high data thruput capability, further augmenting the power of this subsystem. The Universal Communications Subsystem may also be used in a non-dedicated communication system when high thruput rates are required.

Line Interfaces and Mulitplexers

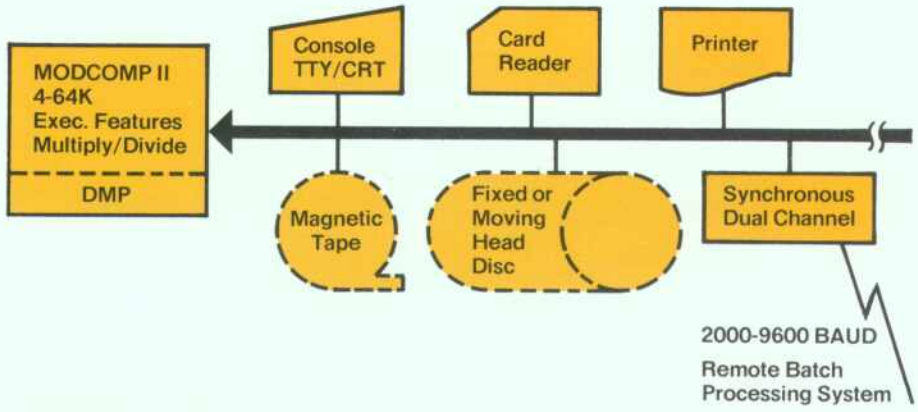
Dual Channel line interfaces are designed to provide low cost communications capability for stand alone real time applications. Configured with remote fill, these interfaces permit a host processor to load a remotely located system across a communications link.

The Asynchronous Communication Subsystem is an economical method for terminating a large number of low speed lines when high throughput is not required. Applications such as remote concentration and low speed message switching are compatible with the capabilities of the Asynchronous subsystem.

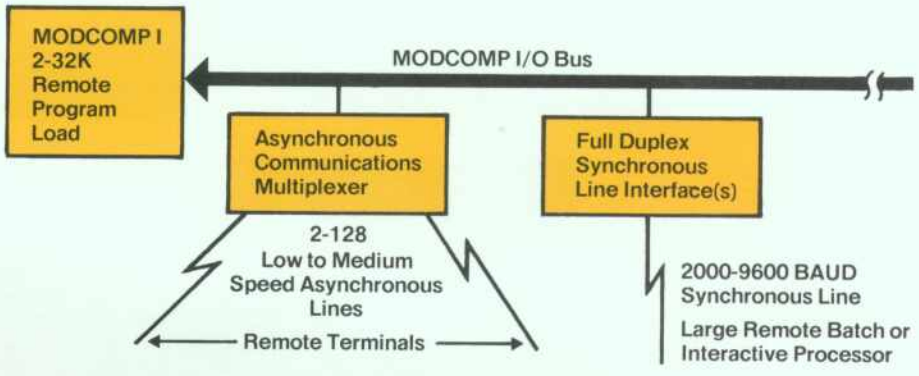
MODCOMP II Front End



MODCOMP II Remote Batch/Job Entry System



MODCOMP I Remote Concentrator



MODCOMP SUPPORT

MODCOMP provides local support to customers from our direct sales and service centers located around the world. (See back cover for the list of existing centers.) Field support back-up, training and software maintenance support are provided from out Ft. Lauderdale, Florida facilities, shown below.

MODCOMP SUPPORT CONSISTS OF:

Training

Almost 30 different hardware and software courses are offered at regular intervals. The three-week MODCOMP II programming courses are conducted at 3-4 week intervals.

Software Support

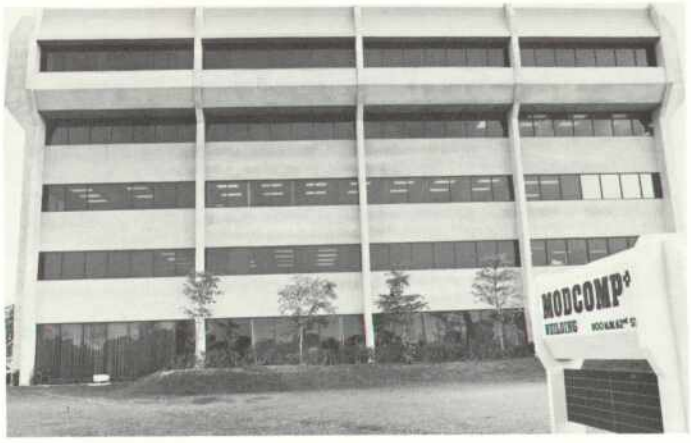
In addition to field support by our system analysts, a home office software support group interfaces directly with customers.

System Analysts

Technical support in hardware and software system design, installation planning, and system operation is provided by our regional system analysts.

Field Service

Local customer service engineers install new systems, provide warranty service, and offer a variety of service contracts ranging from emergency calls to full service.



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