# THE FIRST COMPUTER SYSTEM DESIGNED FOR DATA BASE MANAGEMENT.

# MICRODATA SERIES 9000™ COMPUTER


Microdata®

SIMPLY POWERFUL

# THE LATEST INNOVATION IN DATA BASE SOFTWARE. IS HARDWARE.

Data base management systems are changing the way businesses think about computers.

The conventional approach to computing placed high-speed mainframes in centralized data processing centers, attended by a host of programmers.

Now, data base management is bringing computer power to the users, by making information directly accessible through easy to use languages.

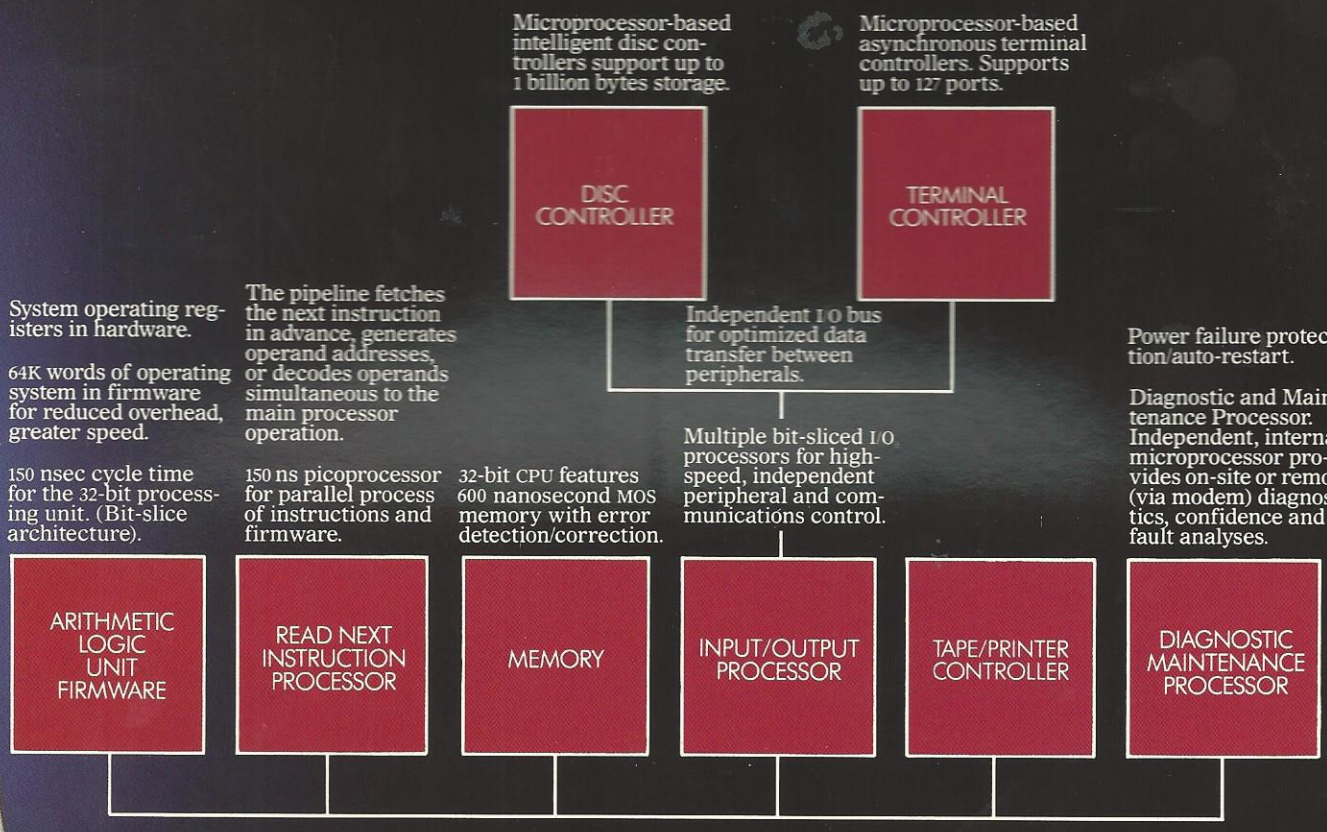
Microdata was a pioneer in the implementation of the data base management concept. Today, thousands of organizations—from small businesses to the largest corporations—are using Microdata computers with the REALITY® relational data base management operating system as an integral part of their business operations.

Data base applications place different demands on computer hardware than the batch processing operations for which most computers were designed.

Data base applications are:

- Transaction-oriented, with a higher ratio of input/output than batch systems.
- Terminal-oriented, requiring a higher level of terminal and communication servicing and scheduling than batch systems.
- Vulnerable to data integrity problems in the event of transaction loss due to system failure.

The Microdata 9000™ system was designed from the ground up to handle these and other data base management requirements.



## MICRODATA 9000 COMPUTER. THE WORLD'S MOST ADVANCED BUSINESS COMPUTER.

The Microdata 9000 Series computer builds on a decade of data base management experience with the REALITY computer system. The 9000 system is fully compatible with the REALITY system, and offers an excellent upward migration path for these users.

The 9000 system doesn't stop at compatibility. It incorporates a completely new architecture, including the most impressive set of advanced features ever provided in a business computer in its price range:

- Up to 127 concurrent interactive terminals.
- Up to 4 million bytes of main memory.
- Up to 1 billion bytes of on-line disk storage.
- Up to 4 independently spooled line printers.
- Communications capability that emulates IBM 3780 functions.
- Innovative multiprocessor architecture.
- High-speed 32-bit central processing unit.
- Virtual memory operating system.

## THROUGHPUT FOR HIGH-VOLUME TRANSACTION PROCESSING.

The 9000 system can support more than 100 concurrent terminals and process over 100,000 transactions per hour in stride.

Each terminal and peripheral controller includes its own microprocessor, relieving the CPU of I/O management.

I/O controllers pre-process data with their own memory management capability, and have direct memory access via a high-speed bus.

A fully configured 9000 system incorporates over 40 individual microprocessors to aid in data management and optimize throughput.

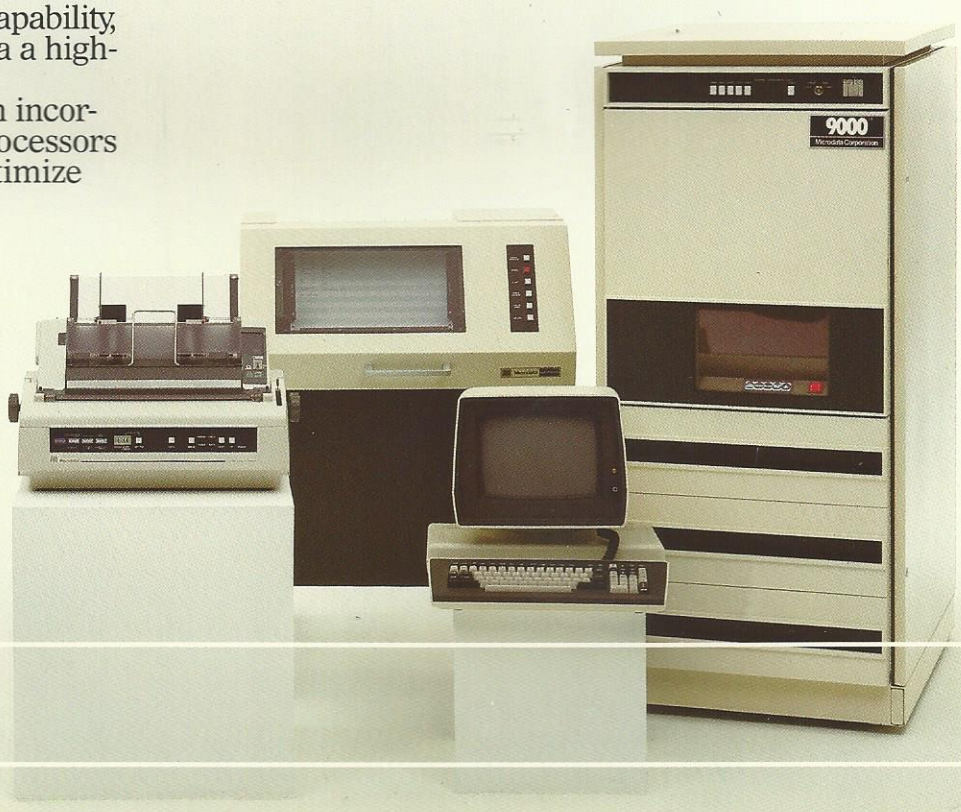
## LOW OVERHEAD FOR HIGH PERFORMANCE.

On a conventional computer, an operating system with the power and capacity of a 9000 system would require an enormous overhead–typically one half to one full megabyte. Up to 80 percent of CPU power is required for operating system overhead on some of these conventional systems.

In the 9000 Series system, like its Microdata predecessors, a portion of the operating system is built into firmware–a technique that Microdata developed to move vital software functions into hardware, thereby reducing system overhead. Less than 30K bytes of the operating system reside in main memory, with another 64K in firmware.

The 9000 system's CPU also features ultra-fast "picoprocessing" or pipelining–a technique to manipulate complex instructions and maximize throughput–a feature previously found only on the most expensive mainframes.

The 9000 system also employs a multiple bus architecture for minimum data congestion under high volume loading. The result is a major advance in the state-of-the-art of data base management hardware.



## A PROCESSOR DEDICATED TO DIAGNOSTICS.

Because system reliability is particularly critical in a transaction-processing environment, the 9000 system includes a special diagnostic and maintenance processor. This processor can perform detailed testing operations on the system, and allows Microdata service engineers to quickly diagnose problems, on-site, or remotely via telephone/modem hookup.

Data integrity is assured with the 9000 system's 1-bit per byte error detection/correction and all-MOS memory featuring battery backup and automatic restart.

Like all Microdata products, the 9000 system is backed by Microdata's worldwide sales and service organization, with round-the-clock, single-supplier service.

## THE INDUSTRY'S BEST-RATED SOFTWARE.

In recent surveys of business computer users, Microdata was most highly rated in ease of use, ease of programming, and ease of conversion.

The 9000 system puts its entire library of REALITY-based software at your service—including many productivity tools that are unavailable from other computer companies.

The REALITY operating system is rapidly becoming a standard by which others are judged. The REALITY operating system not only maintains all your business information in a data base, its design enables users to define relationships among data elements at any time. The REALITY operating system combines these elements to provide information in a format meaningful to the user.

This dictionary-driven approach to data base management enables the system to efficiently serve the widely divergent needs of many users, and keeps the data base simple to maintain.

The ENGLISH® retrieval language was designed so that all users could benefit from the power of the REALITY data base. Even users with no prior computer experience will soon be producing reports to their own specifications, without special training.

A feature called PROC™ can be used to pre-define complex data processing functions and reports. These procedures are stored in the system, and can be invoked with a single command.

For extensive application development, ALL™, the revolutionary application language liberator, can literally cut the development time of complex applications from months to days.

With ALL, a PRO-IV™ product, the user defines the entire application, from data input through report definition, in an interactive session at the terminal. ALL creates the application. It even standardizes labeling and documentation formats—slashing your programmers' documentation and program maintenance chores.

## OTHER REALITY-BASED SOFTWARE SUPPORT ON THE 9000 SYSTEM.

- DATA/BASIC, an enhanced BASIC, including features which simplify programming, and give you access to the full power of the REALITY data base.
- WORDMATE,™ combining a full set of word processing features with access to the REALITY data base. WORDMATE makes it simple to integrate text and data into a single document.
- REALCALC,™ a powerful spread sheet program that also provides data base access. The combination of spread sheet convenience with full data access gives managers an extremely sophisticated tool for analyzing "what if?" questions.
- A wide range of industry-specific REALITY-based applications is also available from Microdata and independent suppliers.

## A FULL RANGE OF PERIPHERALS.

The 9000 system supports the complete range of peripherals available for other Microdata systems.

Options include 150, 300, 600 and 1200 LPM line printers, letter-quality printer, serial interface to support remote 150 and 300 LPM line printers, and 120, 180, 200, 400 CPS matrix printers.

# MICRODATA 9000™ SERIES COMPUTER SPECIFICATIONS.

Microprogrammed Architecture
- Data base management firmware.
- Special instruction emulation firmware.
- Virtual memory operating system.
- Multiuser operating system firmware.
- Dynamic file/memory management.
- Micro-instruction execution time: 150ns

Program/Data Formats
- Character length: 8 bits (1 byte).
- Character string length: 0 to 32,267 characters.
- Fixed point data length: 8/16/32/48 bits (1/2/4/6 bytes).
- Software instruction length: 8/16/32/48 bits.
- Virtual memory direct addressing range: 8GB or 8 billion bytes.

Main Storage—MOS
- Cycle time: 600 ns/32-bit word.
- Minimum capacity: 512KB.
- Maximum capacity: 4MB.
- 32 bit data width; byte addressable.
- Error Checking and Correction (ECC) with 1 bit per byte correction.

Central Processing Features
- Micro-instruction length: 64 bits.
- Multilevel indirect addressing.
- Power failure detection, automatic restart.
- Real-time clock.
- Priority interrupt system.
- Battery backup memory protection.

Input/Output Control
- Independent I/O processors.
- Intelligent controllers functioning through Direct Memory Access (DMA) channels.
- 16 DMA channels.
- Maximum I/O rate 6.7MB/second.
- Terminal I/O rates: 110 to 9600 baud.

Diagnostic and Maintenance Processor
- Independent microprocessor for fault analysis.
- On-line local and/or remote diagnostic capability.
- Self-diagnostic microprogram.

System

Physical

Dimensions: (single bay upright cabinet): 26" (66cm) wide, 58.5" (148.6cm) high, 39" (99.1cm) deep

Weight: 1200 pounds (544.3 kg), typical

Electrical: Voltage: 208, 220, 240 VAC
Frequency: 50/60 Hz

Specs subject to change without notice

# WORLDWIDE DISTRIBUTION NETWORK

**U.S. Branches**

Los Angeles, California (213) 687-9783

Orange County, California (714) 851-1333

San Diego, California (619) 569-8045

San Francisco, California (415) 697-0430

Miami, Florida (305) 823-6381

Tampa, Florida (813) 872-1557

Atlanta, Georgia (404) 393-0240

Chicago, Illinois (312) 920-9100

Boston, Massachusetts (617) 938-1570

Minneapolis, Minnesota (612) 546-3771

St. Louis, Missouri (314) 993-9300

Union, New Jersey (201) 964-6700

New York, New York (212) 695-6509

Cincinnati, Ohio (513) 489-3400

Cleveland, Ohio (216) 234-7318

Columbus, Ohio (614) 861-8465

Philadelphia, Pennsylvania (215) 265-7744

Pittsburgh, Pennsylvania (412) 787-8360

Dallas, Texas (214) 233-8800

Houston, Texas (713) 880-9495

**U.S. Dealers**

Anchorage, Alaska (907) 561-4252

Emeryville, California (415) 547-6565

Fresno, California (209) 252-3725

Englewood, Colorado (313) 695-9180

Honolulu, Hawaii (808) 521-8011

Indianapolis, Indiana (317) 635-4310

Monroe, Louisiana (318) 325-9618

Syracuse, New York (315) 432-0256

Puerto Rico (809) 844-3020

Raleigh, North Carolina (919) 848-0001

Salt Lake City, Utah (801) 524-2000

Alexandria, Virginia (703) 549-4300

Vancouver, B.C. (604) 438-7361

Kingston, Ontario (613) 549-3411

**International Subsidiaries**

Microdata Information Systems, Ltd. England 442-61266

Microdata Business Systems S.A. Switzerland 022-214235

Microdata GmbH West Germany 0221-35 10 71/0611

**International Agents, Dealers and Distributors**
Australia, Bahrain, Ghana, Greece, Hong Kong, Iceland, Ireland, India, Indonesia, Iran, Iraq, Japan, Kenya, Kuwait, Libya, Malaysia, Mexico, Namibia, New Zealand, Nigeria, Pakistan, Philippines, Poland, Qatar, Saudi Arabia, Singapore, South America, Sri Lanka, Sweden, Syria, and Turkey

Printed in U.S.A. 3-84 20K Reorder #84-0297

MICRODATA CORPORATION
17481 Red Hill Avenue
P.O. Box 19501
Irvine, CA 92713
714-250-1000 TWX: 910-595-1764

Microdata Corporation is a subsidiary of McDonnell Douglas Corporation.



**Microdata**

SIMPLY POWERFUL