



Micro Data Base Systems, inc.

# THE DATA BASE SPECIALIST

**HDBS - HIERARCHICAL DATA BASE MANAGEMENT SYSTEM**  
**MDBS - OUR FULL NETWORK DATA BASE MANAGEMENT SYSTEM**

HDBS FEATURES	ADDITIONAL FEATURES IN MDBS
<ul style="list-style-type: none"> <li>• HIERARCHICAL DATA STRUCTURES</li> <li>• FIXED LENGTH RECORDS</li> <li>• READ/WRITE PROTECTION AT FILE LEVEL</li> <li>• ONE-TO-MANY SET RELATIONSHIPS ALLOWED</li> </ul>	<ul style="list-style-type: none"> <li>• HIERARCHICAL AND FULL NETWORK DATA STRUCTURES (CODASYL ORIENTED)</li> <li>• FIXED AND VARIABLE LENGTH RECORDS</li> <li>• MULTIPLE LEVELS OF READ/WRITE PROTECTION AT ITEM, RECORD, SET AND FILE LEVELS</li> <li>• EXPLICIT REPRESENTATION OF ONE-TO-ONE, ONE-TO-MANY, MANY-TO-ONE AND MANY-TO-MANY SETS</li> <li>• OCCURRENCES OF A RECORD TYPE MAY OWN OTHER OCCURRENCES OF THE SAME RECORD TYPE</li> <li>• A SINGLE SET MAY HAVE MULTIPLE OWNER AND MEMBER RECORD TYPES</li> </ul>

### FEATURES COMMON TO HDBS and MDBS

STRAIGHT FORWARD USE OF ISAM-LIKE STRUCTURES  
 SORTED, FIFO, LIFO, NEXT AND PRIOR SET ORDERING PROVIDED  
 COMMANDS TO ADD, DELETE, UPDATE, SEARCH AND TRAVERSE THE DATA BASE  
 NAMES OF DATA ITEMS, RECORDS, SETS AND FILES ARE WHOLLY USER DEFINABLE  
 RECORDS CAN BE MAINTAINED IN A NUMBER OF SORTED ORDERS  
 ROUTINES ARE CALLABLE FROM BASIC, PASCAL, FORTRAN, COBOL OR MACHINE LANGUAGE  
 WRITTEN IN MACHINE LANGUAGE FOR MAXIMAL EXECUTION EFFICIENCY AND MINIMAL MEMORY USAGE  
 SUPPORTS DATA BASE SPREAD OVER SEVERAL DISK DRIVES (MAX. 8) DISKS MAY BE MINI OR FULL SIZED FLOPPIES OR HARD DISKS

Also

UP TO 254 RECORD-TYPES MAY BE DEFINED IN THE DATA BASE  
 EACH RECORD-TYPE MAY CONTAIN UP TO 255 ITEM-TYPES  
 EACH ITEM-TYPE MAY BE UP TO 9,999 BYTES IN LENGTH

### REQUIREMENTS

- Z-80 APPROXIMATELY 16K MEMORY -
- 8080 APPROXIMATELY 20K MEMORY -
- IN ADDITION TO THE OPERATING SYSTEM, HOST LANGUAGE, USER'S PROGRAM AND SOME BUFFER AREA

### NEW DYNAMIC RESTRUCTURING SYSTEM

#### MDBS-DRS FEATURES

ALLOWS ITEM, RECORD AND/OR SET TYPES TO BE ADDED TO OR DELETED FROM AN EXISTING MDBS DATA BASE. THIS ALLOWS THE USER TO RE-DESIGN A DATA BASE AFTER IT IS ALREADY ON-LINE.

THIS FEATURE CAN ONLY BE ADDED TO THE MDBS SYSTEM.

### HDBS and MDBS PACKAGES INCLUDE

**DDL DATA DEFINITION LANGUAGE ANALYZER/EDITOR.** The user specifies data structures to be used in a Concise Data Definition Language (DDL). The Data Definition Language Analyzer/Editor allows the user to interactively create and edit DDL Specifications and to initialize the data base for use based on these specifications.

**260 PAGE USERS MANUAL** with extensive documentation of the Data Base Management System.

**DMS DATA MANAGEMENT ROUTINES.** These are the routines callable from the host language (BASIC, COBOL, etc.) which perform the data base operations of finding, adding, and deleting records; fetching and storing data items; and traversing the (possibly complex) data structure.

**SAMPLE APPLICATION PROGRAM AND DDL FILES**

**RELOCATOR TO RE-ORG ALL ROUTINES**

**SYSTEM SPECIFIC MANUAL** to show how to bring up our software on your computer

### RUNS UNDER

- CP/M\* WITH MICROSOFT BASIC, COBOL AND FORTRAN
- MACHINE LANGUAGE CALLABLE FORMS
- OTHER FORMS IN DEVELOPMENT

HDBS - Z80 VERSION	\$250
8080 VERSION	\$325
MANUAL ONLY	\$ 35
UPGRADE TO MDBS	\$550
MDBS - Z80 VERSION	\$750
8080 VERSION	\$825
MANUAL ONLY	\$ 35
MACHINE LANGUAGE CALLABLE FORMS ADD	\$ 75
MDBS - DRS	\$100
MANUAL ONLY	\$ 5



WE ACCEPT



FOR FREE PRIMER CONTACT MDBS.

ADD \$2.50 (\$5.00 IF FOREIGN) TO NON-CASH ORDERS FOR HANDLING AND SHIPPING. INDIANA RESIDENTS ADD 4%.

### MICRO DATA BASE SYSTEMS, INC

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# THE NUMBERS

## MDBS and HDBS

The **THEROETICAL LIMITS** on the size of a MDBS or HDBS data base are:

- A Data Record May Be Up To 65521 Bytes Long.
- A Data Item (Field) In A Record May Be Up To 9999 Bytes Long. An Item May Be Treated As A Vector Which Repeats Up To 9999 Times (But Note That The Maximum Length Is 65521).
- Up To 255 Data Items May Be Defined In A Given Data Record.
- Up To 254 Different Record Types May Be Defined In The Data Base.
- A 32 Bit Address Space Is Used For Disk Resident Data, Implying A Maximum Data Base Size Of Over 4.2 Billion Bytes.

**THEORETICAL LIMITS**  
**SUGGESTED PRACTICAL LIMITS**  
**SYSTEM OVERHEAD**

THE NUMBERS

**MDBS  
and  
HDBS**

**SUGGESTED PRACTICAL LIMITS** (due to non-MDBS restrictions — such as memory) are:

- A DATA RECORD IS TYPICALLY LESS THAN 4000 BYTES LONG.
- A DATA ITEM IS TYPICALLY LESS THAN 4000 BYTES LONG, ALSO.
- UP TO 255 DATA ITEMS PER RECORD AND 254 RECORD TYPES PER DATA BASE.
- UP TO 8 ON-LINE DISK DRIVES, EACH OF WHICH ARE TYPICALLY LIMITED TO 32 MEGABYTES.
- THE LIMIT ON THE NUMBER OF OCCURRENCES OF A DATA RECORD IS LIMITED ONLY BY THE AMOUNT OF AVAILABLE DISK SPACE.

### SYSTEM OVERHEAD

The Amount Of Disk Space Required For Pointers And System Information Varies Depending On the Application. A Rough Approximation Of The Amount Of Disk Space Required, In Bytes, Can Be Roughly Estimated For Each Type Of Data Record In The Data Base By The Following Formula:

$$NRO * (5 + DL + 8 * NS)$$

Where

NRO = expected number of occurrences of the record type.

DL = number of bytes required to hold the data for this record.

NS = the number of set relationships in which this record is a participant  
(owner or member)