

IBM System/23 Datamaster

MANAGEMENT SUMMARY

The System/23 Datamaster is a business computer specifically designed to combine data processing and word processing. Intended for the first-time user, the system provides an integral Basic interpreter, replacing the earlier Basic models of the IBM 5120 Computing System. However, the APL models of the IBM 5120 are still available.

A System/23 Datamaster configuration can include up to four computer workstations. Each computer workstation has its own memory and diskette storage. Workstations function independently of each other; however, each workstation can attach to a stand-alone diskette unit or disk storage unit and share their files.

The System/23 Datamaster's processing unit offers single- or dual-integrated diskette drives. The diskette storage capacity is either 1.1 or 2.2 megabytes. The optional diskette unit expands storage to a maximum of 4.4 megabytes. The disk storage unit, another option, provides a maximum storage capacity of 30.8 megabytes. The CRT displays up to 1920 characters on a 12-inch screen. Also included is a typewriter-style keyboard with a 10-key numeric pad. Two models of the System/23 are available: Model 5322 is a totally integrated system; Model 5324 consists of three separate adjustable modules: the keyboard, the CRT display and the processor.

In addition to the stand-alone diskette unit and disk storage unit, the System/23 offers a choice of four printer models and an optional magnetic card unit. Each computer workstation can include one or two printers in any combination.

Three of the printers available are bidirectional matrix printers; the fourth is a bidirectional daisywheel printer. ➤



The System/23 Datamaster is a desktop computer designed for first-time users. It features a four workstation/shared file architecture and a functionally enhanced Basic language that is highly compatible with System/34 Basic. A full function data processing and word processing installation with one workstation with 64K bytes of main memory, and an 80 cps printer is priced at \$7,585.

MAIN MEMORY: 64K and 128K bytes.
DISKETTE CAPACITY: 1.1 to 6.6 megabytes.
DISK CAPACITY: 15.4 and 30.8 megabytes.
WORKSTATIONS: 1 per CPU; 4 workstations can share up to 30.8 megabytes of file storage.
PRINTERS: 40, 60, 80, 160 cps.
OTHER I/O: Magnetic card unit.

CHARACTERISTICS

MANUFACTURER: International Business Machines Corporation, Information System Group, 1133 Westchester Avenue, White Plains, New York 10604. Telephone: (914) 686-2363.

MODEL: System/23 Datamaster is currently available in 24 submodels according to their function, main memory size, and integrated diskette capacity.

DATE ANNOUNCED: July, 1981.

DATE OF FIRST DELIVERY: July, 1981.

DATA FORMATS

BASIC UNIT: 8-bit byte. ➤

Datamaster, IBM's low-cost small business computer system, features an optional four CPU/workstation configuration which utilizes a separate 15.4 or 30.8 megabyte disk storage unit for file sharing. Each computer workstation provides up to 128K bytes of main memory and up to 4.4 megabytes of on-line diskette storage.

IBM System/23 Datamaster

▷ The 5241 Printer prints at 80 cps. The 5242 Printer is available in two models: Model 1 prints at 160 cps; Model 2 prints at the same speed, but can also create high-density, high-quality matrix printing on cutforms at 40 cps. High-density printing which is invoked by a program command, is created by making a second head pass over the same printed line. The 5217 bidirectional daisywheel printer is a compact, table-top unit capable of printing at 60 cps. Also available on the 5217 are an optional automatic cut sheet feeding capability and continuous forms feed device.

The 5231 Magnetic Card Unit, which uses OPD 50 track magnetic cards, reads at up to 20 seconds/card and records at up to 30 seconds/card.

The System/23 is available in 24 sub-models: 12 that are for the data processing alone, and 12 that also include word processing hardware and software. In addition to the word processing options, the models are distinguished by the size of main memory and the amount of diskette storage.

The System/23 Datamaster word processing option integrates text and data processing. In a typical application, the system can use its own data processing files to print individualized business letters for mass mailing to all customers or to specified groups. The word processing program provides a training package for basic document entry, editing, and standard letter personalization. It assembles business documents from letter descriptions and data processing file data.

For text processing, the display scale line shows margins, tabs, paper edges, center point and shadow cursor. Vertical and horizontal segmenting allow the operator to review all parts of the stored page. Word processing can also be used to create, revise, delete, duplicate, print, store, and retrieve documents. Text manipulation is facilitated by block movement of text, stored formats, auto carrier return, line adjust, paginate functions, and an interactive find function. The word processing function requires at least 64K bytes of memory of memory and 1.1 megabytes of diskette storage.

IBM Word Processing II for Datamaster is designed for operation on models 5322 or 5324 Computers with word processing, 128K bytes of user storage, and 1.1MB of diskette storage or the 5247 Disk Unit. IBM recommends that a minimum of two diskette drives be configured for Word Processing II. The new word processing program includes a spelling verification and English language dictionary for 130,000 words. In addition, the program provides room for a list of approximately 500 user-defined terms. An automatic hyphenation function uses the dictionary for spelling verification and assistance. The program also provides synonym assistance with an IBM-supplied thesaurus of English language words. The words are organized by parts of speech (i.e., noun, verb, adjective, etc.) and are displayed to the user in lists. This function can be initiated only during document creation or editing. ▷

▷ **INSTRUCTIONS:** IBM has not released details on the format of individual System/23 Datamaster machine instructions, the number of instructions in the instruction set, or the classification of individual instructions.

INTERNAL CODE: EBCDIC.

MAIN STORAGE

TYPE: MOSFET (metal-oxide semiconductor field-effect transistor).

CYCLE TIME: 975 nanoseconds per 1-byte access.

CAPACITY: 32,768 bytes to 131,072 bytes.

CHECKING: Internal parity checking.

STORAGE PROTECTION: In conjunction with programming support, System/23 Datamaster offers built-in characteristics to assist the users to achieve a level of protection to suit their needs. These characteristics include:

- Language facilities to prevent inadvertent modification of data and programs
- Programs can be locked to be run, but not listed
- Programming techniques are available which prevent critical data from appearing on the CRT screen or the printer
- Station Address and Terminal Identification is provided for systems which operate in certain communications environments
- Block checking is performed on all data transmitted or received over BSC communications channels

RESERVED STORAGE: 12K bytes are permanently allocated for use by the Basic language interpreter.

CENTRAL PROCESSOR

The IBM 5322 Computer contains main storage, arithmetic and logical processing circuits, control functions for I/O units, and the keyboard/CRT. Most models have integrated diskette drives. The 5324 Computer is a separate unit which contains the processor logic and memory, power supply, integrated diskettes (optional), and space for optional features. The keyboard/CRT are separate modules. Up to two 5322 or 5324 Computers can be included in a configuration by attachment to a shared function model of the 5246 Diskette Unit (Models 21 or 22); up to four 5322 or 5324 Computers can be configured by attachment to the 5247 fixed Disk Storage Unit.

INPUT/OUTPUT CONTROL

I/O CHANNELS: A direct memory access channel is a standard feature. One printer attachment is standard and two special feature slots are available on the data processing models.

SIMULTANEOUS OPERATIONS: Transparent data file sharing between up to four 5322 or 5324 workstations is managed in the Read Only Storage (ROS) of each computer. Application transparency will also allow programs written for a multiple workstation system to operate on a single 5322 or 5324 with no modification required.

CONFIGURATION RULES

Each System/23 Datamaster includes either a 5322 or 5324 Computer with 64K or 128K bytes of main memory. The 5322 is a desktop unit with a 1920-character display and keyboard, a secondary storage attachment, a communication feature, an additional printer attachment, and an integral interpretive language (Basic). The 5324 Computer contains the same ▷

IBM System/23 Datamaster

PERIPHERALS/TERMINALS

MODEL	DESCRIPTION & SPEED
5322 Display	12-inch CRT screen displays 1,920 characters in 24 lines of 80 characters each; displays upper and lower case; dual intensity, reverse image, blinking, underlining, non-display for security, audible alarm
5324 Display	Same as 5322 except cable-connected to 5324 Computer. May be tilted for operator convenience
5322 Keyboard	Alphanumeric typewriter-style with a separate numeric pad; two operator keys provide arithmetic functions; insert, delete, and scroll capabilities
5324 Keyboard	Same as 5322 except mounted in adjustable base and is cable-connected to 5324 Computer. Palm rest and space above keys for keyboard aids is provided.
DISKETTE DRIVES	See "Mass Storage" section of this report
PRINTERS	
5217 Model CO2	Bidirectional daisywheel printer; printwheels available in 10, 12, 15 pitch or proportional spacing; program selectable vertical spacing from 4 lines/inch to 24 lines/inch; second Printer Attachment (6350) required to attach printer to a 5322 or 5324; multiple typesets available; optional automatic cut sheet feeding capability and continuous forms feed device; 60 characters/second
5241 Model 1	Bidirectional matrix printer; 132 print positions at 10 characters/inch, 198 print positions at 12 characters/inch, program-selectable vertical line spacing from 1 line/inch to 12 lines/inch; handles fan-folded paper from 3 to 14 inches, up to four-part forms; 80 characters/second
5242 Model 1	Bidirectional matrix printer; 132 print positions at 10 characters/inch, 198 print positions at 15 characters/inch, program selectable vertical line spacing from 1 line/inch to 12 lines/inch; handles fan-folded paper from 3 to 14 inches, up to four-part forms; 160 characters/second
5242 Model 2	Model 2 has the same characteristics as Model 1 when operating in matrix print mode at 160 characters/second. Also offers the ability to create high-density, high quality matrix impact printing on cut forms through a second pass over the same printed line. High-density printing is involved by a program command and will operate at 40 characters/second with a character spacing of 10 characters/inch
MAGNETIC CARD UNIT	
5321	Reads and records data using OPD 50 track magnetic cards. Reading is at the maximum rate of 20 seconds/card. Recording is at the maximum rate of 30 seconds/card

➤ IBM Word Processing II for Datamaster is designed for operation on models 5322 or 5324 Computers with word processing, 128K bytes of user storage, and 1.1MB of diskette or the 5247 Disk Unit. IBM recommends that a minimum of two diskette drives be configured for Word Processing II. The new word processing program provides a spelling verification and English language dictionary for 130,000 words. In addition, the program provides room for a list of approximately 500 user-defined terms. An automatic hyphenation function employs the dictionary used for spelling verification and assistance. The program also provides synonym assistance with an IBM-supplied thesaurus of English language words. The words are organized by their use (i.e., noun, verb, adjective, etc.) and displayed to the user in lists. This function may be initiated during document creation or editing only.

IBM Word Processing II has the same functions of the previously announced Word Processing program. However, additional capabilities have been added to enhance stand-alone word processing, word/data processing, and multi-page document preparation. Many functions also include an additional operator ease-of-use capability. Text that has been processed and stored on diskette by the IBM Datamaster Word Processing

➤ features as the 5322 except that it is ergonomically designed and is divided into three separate adjustable modules.

WORKSTATIONS: Two 5322 or 5324 Computers can share a 5246 Model 21 or 22 Diskette Unit to form what IBM calls a dual workstation/shared-file architecture system. Each workstation functions as a total system and operates independently of the other, but can share the files stored on the 5246 Model 21 or 22. Up to four 5322 or 5324 Computers, in any combination, can share the files of the 5247 Disk Storage Unit.

DISKETTE STORAGE: Each desktop unit can house one or two diskette drives, each with a capacity of 1.1 megabytes, thus affording a maximum of 2.2 megabytes of integrated diskette storage. In addition, a free-standing unit with the same capacities can be added, thus providing a maximum diskette storage capacity of 4.4 megabytes per desktop unit. Only one free-standing unit can be included in a dual-CPU/workstation configuration and can be shared by both units if it is a shared function diskette model.

MAGNETIC TAPE UNITS: None currently available from IBM.

➤ **PRINTERS:** Up to two 5217, 5241 or 5242 printers can be attached to each desktop unit. ➤

IBM System/23 Datamaster

▷ program can be used by the new program. Users may also upgrade their existing programs to IBM Word Processing II.

The Basic computer language used by the System/23 is highly compatible with the Basic available on IBM's System/34. According to IBM, most System/23 Basic language statements are upward compatible with System/34 Basic. Typically, with some small amount of modification, System/23 programs can be migrated to System/34. Modifications may be more extensive in programs where file sharing and error recovery logic are heavily used.

The IBM Basic Conversion Aid licensed program is also available for the System/23. This program is designed to assist the experienced 5110/5120 Basic application programmer in converting existing 5110/5120 Basic application programs to System/23 Basic. This program can reduce, but not totally eliminate, the need to recode Basic application programs.

BRADS III, also a licensed program, provides the facility for a non-programmer to define, create, and maintain files and to build file inquiries and create reports from the file data. BRADS III is an IBM-enhanced version of the field-developed BRADS II program used on the IBM 5110/5120.

IBM also offers the System/23 Binary Synchronous Communications licensed programs. Using the Binary Synchronous Communications protocol, the System/23 can transmit batch data, receive batch data, and inquire into a host system and receive batch data. Using IBM 3741 protocol, the System/23 can communicate with another System/23, and the following IBM systems: System/3 Model 15D, System/34, System/38, 5280, 5265, 5110, 5120, and the Series/1.

Using the Asynchronous Communications Program, the System/23 can communicate with System/370 Models 135-168, 3031, 3032, 3033, 3081, 4331, and 4341 via VM/370, Series/1 systems, and System/23. The program consists of communications access method support, a set of communications customer support functions, and a facility for user-written communications programs using System/23 Basic.

The Business Management Accounting System for Diskette is one set of application packages licensed with the System/23 Datamaster. The application packages, which are multi-industry programs for performing business accounting, include billing, inventory accounting, accounts receivable, accounts payable, and general ledger. Datamaster allows users to automatically update information between application programs.

Available for the IBM Datamaster Disk is the Business Management Accounting System which includes general ledger, accounts payable, accounts receivable, inventory accounting and billing. These multi-industry licensed ▷

▶ MASS STORAGE

INTEGRATED DISKETTE: Each desktop unit can include one or two diskette drives using IBM type 1, 2, or 2D diskettes. The formats for these diskettes are as follows:

Diskette 1

Format	Bytes/Sector	Capacity
1	128	243KB
2	512	303KB

Diskette 2

Format	Bytes/Sector	Capacity
3	128	486KB
4	512	606KB

Diskette 2D

Format	Bytes/Sector	Capacity
5	256	985KB
6	512	1136KB

The System/23 uses the 512-byte format as standard, but other formats may be selected for data interchange purposes. The data transfer rate using IBM diskettes 1 or 2 is 31.2K bytes per second; for diskette 2D, 62.5K bytes per second. Rotational speed for both types of drives is 360 RPM.

5246 DISKETTE UNIT: This is a free-standing diskette unit with the same capabilities and characteristics as the integrated unit. The 5246 is available in four models. Models 11 and 12 have capacities of 1.1 and 2.2 megabytes, respectively, and are dedicated to one System/23 unit. Models 21 and 22 also store 1.1 and 2.2 megabytes of data, respectively, but are shared by both desktop units in a dual-CPU/workstation configuration. Desktop units that use the 5246 must have a 5246 Diskette Unit Controller or an Extended 5246 Controller installed.

5247 DISK STORAGE UNIT: This is a floor-standing, high performance fixed disk unit. The 5247 is available in two models. Model 011 has a storage capacity of 15.4 megabytes; Model 012 has a storage capacity of 30.8 megabytes. Average access time is 40 ms. Standard 5247 Models 11 and 12 may attach to one or two Datamasters. An adapter expansion (#3700) allows a third and fourth System/23 computer to be attached to the 5247. Three Datamasters may be located up to 1000 feet in distance; one computer must remain adjacent to the 5247 for servicing use. The 5247 is file format compatible with System/23 Datamaster diskettes.

INPUT/OUTPUT UNITS

See the Peripheral/Terminals table on the third page of this report.

COMMUNICATIONS CONTROL

COMMUNICATIONS ADAPTER FEATURE: Includes communications interface hardware and licensed programs that enable the System/23 to communicate using either asynchronous or binary synchronous protocol. The physical interface for asynchronous communications is EIA RS-232-C/CCITT V24-V28 and transfer of data is via ASCII code. The physical interface for binary synchronous communication is EIA RS-232-C/CCITT V24-V28 with clocking supplied by the modem. Transfer of data is in EBCDIC and EBCDIC transparency modes at speeds up to 4800 bps. One of the IBM modems, 3863 (2400 bps), 3864 (4800 bps), 3872 ▶

IBM System/23 Datamaster

► programs support the IBM Datamaster with the 5247 Disk Storage Unit attached. These programs are an extension of the Business Management Accounting System for Datamaster Diskette. Both programs feature identical accounting functions and consistent user interfaces.

COMPETITIVE POSITION

The System/23 is fairly low priced (\$18,525 for a system with 128K of main storage, 30 million bytes of disk storage and a 160 cps matrix printer), compared to other entry level systems such as the Hewlett-Packard HP 250 (\$29,000 for 160K of main storage, 20 million bytes of disk storage and a 180 cps printer) and the Wang 2200 MVP (\$28,900 for 128K of main storage, 27 million bytes of disk storage and an 80 cps printer). Only a comparable Burroughs B 90 is lower in price (\$14,115 for 128K of main storage, 40 million bytes of disk storage and a 120 cps printer).

ADVANTAGES AND RESTRICTIONS

The System/23 has the advantage of integrating the functions of data processing and word processing in one entry level system. Such a system is in great demand today. Furthermore, the Basic language used by the System/23 is highly compatible with System/34 Basic, offering the user the potential for growth within the IBM family. That growth, however, is halted at the System/34 level at this time. Other systems, such as the Burroughs B 90 and the Hewlett-Packard HP 250, offer more growth potential spanning several different systems.

For the user looking for packaged software products, the B 90 and HP 250 again offer much more of a variety than the System/23. Only basic accounting functions are available from IBM, while the B 90 offers such diverse programming products as a hospital management system or credit union system, and the HP 250 supports a data base management system.

The System/23 does not support terminals, instead it requires the installation of additional workstations. Up to four systems can be networked together and share up to 30.8 million bytes of file storage. For those users trying to minimize cost, this could be a significant factor. The *smallest* System/23 workstation is priced at \$3,140, while a Burroughs terminal model MT985 costs \$2,210 and a HP 2622D workstation is priced at \$2,500.

USER REACTION

Fifteen System/23 users responded to the 1983 Datapro Computer User's Survey. These users represented 26 systems with an average length of installation of 22 months. Thirteen of the users purchased their systems, one leased from the manufacturer, and one leased from a third party.

Businesses represented included Public Accounting/ Consulting, Retail/ Wholesale, Media, and a Service ►

► (2400 bps), or 3874 (4800 bps) can be attached to the Communications Adapter Feature.

For more information on the communication capabilities of the System/23 see the Communications Software section.

SOFTWARE

OPERATING SYSTEM: The System/23 Datamaster does not have an operating system in the usual sense. Its system control functions are integrated into the 112K bytes of read-only storage (ROS). System control functions are primarily concerned with coordinating the interface between the user programs, the Basic language interpreter, the Word Processing licensed program, and the peripheral devices.

PROGRAMMING LANGUAGES: The only language currently available for the System/23 is Basic. The System/23 Basic interpreter is highly compatible with the Basic available on IBM's System/34. According to IBM, most System/23 Basic language statements are upward compatible with System/34 Basic. Typically, with some small amount of modification, System/23 Datamaster programs can be migrated to System/34. Modifications may be more extensive in programs where file sharing and error recovery logic are heavily used.

Coding and logic enhancements for System/23 Basic include 8-character variable names, program lines up to 255 characters, comments on lines, line labels, page control, time and date variables, IF-THEN-ELSE logic, full-screen processing, and nested procedures. Improved string and text functions include generalized substring referencing, replacement of text within a string, and array search. I/O enhancements include a simple unformatted mode; full format input/output to the display screen, both printer ports, diskette files and communication features; eleven graphic symbols for line drawing and screen printer report formats; screen highlights; varied data representation; access of file records sequentially by relative record number of separate file index/ sequence; sequential file buffering up to 7680 bytes; and support for Basic interchange and H-exchange file formats permitting file transfer to and from most IBM diskette-based products.

UTILITY PROGRAMS: A diskette sort is optionally available with the System/23 that features full record sorting or record address sorting, a sort key that can contain up to ten sort fields, the ability to store control statements on diskette or enter them from the keyboard via prompting messages, and a record select/omit feature.

In addition, IBM customer support functions include providing a loader for machine updates, diskette preparation, alternative collating sequence, diskette-to-diskette copy, diskette recovery, index file generation, and label display.

WORD PROCESSING: The System/23 Datamaster word processing option features integrated text and data processing. The word processing models consist of hardware and a licensed program to support the additional functions. Word processing requires a minimum of 64K bytes of main storage and 1.1 megabytes of diskette storage.

The functions supported by the word processing hardware and licensed program to create, edit, print, etc., are as follows:

- Input—Create document, formats, automatic word wrap.
- Edit—Delete, find, indent, block operations, word underscore, page delete/restore.
- Print—Page align, text align, page number control.
- Merge—DP/WP merge, stop code (interactive).
- Pagination—Character and line count, syllable hyphen control, required page and control. ►

IBM System/23 Datamaster

➤ Bureau. Major applications used by the respondents included Accounting/Billing (73%), Payroll/Personnel (53%), Sales/Distribution (40%), Order Processing/Inventory Control (33%) and Construction/Architecture (27%). Individual respondents were also using the System/23 for Insurance, manufacturing and Mathematical applications.

An average installation was configured as a central processing site with from one to five local workstations, from 64K to less than 128K of main storage, and from 20 million to less than 80 million bytes of disk storage.

The users rate the System/23 as follows:

	Excellent	Good	Fair	Poor	WA*
Ease of operation	10	5	0	0	3.7
Reliability of mainframe	9	4	0	0	3.7
Reliability of peripherals	7	5	1	0	3.5
Maintenance service:					
Responsiveness	9	5	0	0	3.6
Effectiveness	7	5	2	0	3.4
Technical support:					
Trouble-shooting	5	5	3	0	3.2
Education	4	7	1	2	2.9
Documentation	10	3	1	1	3.5
Manufacturer's software:					
Operating system	7	5	3	0	3.3
Compilers & Assemblers	3	8	0	1	3.1
Applications programs	3	7	1	0	3.2
Ease of programming	10	5	0	0	3.7
Ease of conversion	5	2	4	2	2.8
Overall satisfaction	6	9	0	0	3.4

*Weighted Average on a scale of 4.0 for Excellent.

As the table shows, the respondents were pleased with their systems. The most common advantages mentioned were: the system was easy to expand/reconfigure (66%); response time was acceptable (53%); the productivity aids available on the system helped keep programming costs down (46%); the system costs were less than expected and delivery and/or installation was ahead of schedule (33%). The most frequently cited disadvantages were: delivery of software was late (26%); program/data compatibility was not what the vendor promised, and equipment is excessively noisy (13%).

Fourteen of the users stated that they would recommend the System/23 to another user, while the one remaining user was undecided. □

- • Document services—Copy document, delete document, change document profile, list drive contents.

The IBM Word Processing II program is designed for word processing models of 5322 and 5324 Computers with 128K bytes of user storage and 1.1 megabytes of diskette storage or a 5247 Disk Unit. Word Processing II provides a 130,000 word spelling verification and English language dictionary. Users may also define 500 terms which are unique to their specific applications. An automatic hyphenation function uses the spelling dictionary for spelling verification and assistance. The program also provides synonym assistance with an IBM-supplied thesaurus of English language words.

IBM Word Processing II has the same features as the original word processing program in addition to the following enhancements:

- Word Processing—clear/set tabs, multiple save areas with
- append, decimal/center/right tabs, sub/superscript, page number increments, page GOTO, overstrike, phrase glossary, prompted hyphenation during edit.
- DP/WP—WP execution from a procedure file, Basic during Merge File/Text, DP file record selection, get/include display file.
- Document Assembly—get/include page, page split.
- Paginate—widow line control, keep, include page from document, auto search, auto replace.
- Document Control—sign-on menu, recover document, operator profiles, document owner specified access restrictions.

COMMUNICATIONS SOFTWARE: Two licensed programs, Asynchronous Communications and Binary Synchronous Communications, allow the System/23 to communicate with selected IBM systems and devices.

The Asynchronous Communications Program consists of communications access method support, a set of communications customer support functions, and a facility for user-written communications programs using System/23 Basic. In conjunction with the communications access method, the Asynchronous Communications Terminals customer support function provides the user with an interactive interface to perform asynchronous communications.

Features of the Asynchronous Communications Program include:

- A data transfer function which gives System/23 Datamaster functional characteristics commonly referred to as TTY-compatible. This function uses start-stop discipline and permits the user to transfer data using the ASCII translate table and the Asynchronous Communications Terminal function of the licensed program.
- A code translation table is provided to convert Datamaster internal EBCDIC code to/from ASCII code. Other tables may be built by the user.
- Provides the operator with an ease-of-use interactive function that leads the user through a step-by-step procedure using prompts and responses for defining and establishing communications and for performing other TTY functions.
- The input/output devices supported are the keyboard/display and printer.
- Provides a facility for the execution of Basic language user-written programs to perform data transfers.

This support can be used to communicate with the following IBM systems:

- System/370, Models 135-168, 3031, 3032, 3033, 3081, 4331, and 4341 via VM/370 (full duplex, switched facilities)
- Series/1 (EDX, RPS) (half duplex, switched facilities)
- Datamaster (full and half duplex, switched and non-switched)

The IBM System/23 Binary Synchronous Communications licensed program consists of communications access method support, a set of communications customer support functions, and a facility for user-written communications programs using the System/23 Basic language. In conjunction with the communications access method, the communications customer support functions can perform the following data transfer functions using the Binary Synchronous Communications protocol: ➤

IBM System/23 Datamaster

- ▶ • Transmit batch data
- Receive batch data
- Inquire into a host system and receive batch data

Features of the Binary Synchronous Communications include:

- Datamaster uses the line protocol of the IBM 3741 to communicate with a variety of IBM systems.
- Includes a data transfer function which performs batch data transfers (both attended and unattended).
- The input/output devices supported are the keyboard/display, printers, and diskette.
- Provides a facility for BASIC language user-written programs to perform data transfers.
- Code translation tables are provided to convert Datamaster's internal Multilingual Character Set to/from the National Language Version. Other tables may be built by the user.
- Provides an operator an ease-of-use interactive function that leads the user through a step-by-step procedure using prompts and responses for defining and establishing communication and batch data transfer functions.

Datamaster uses IBM 3741 protocol to communicate with the following IBM systems:

- System/3 Model 15D
- Datamaster
- System/34
- System/38
- 5280 Distributed Data Systems
- 5265 Point-of-Sale Terminal
- 5110 Computer
- 5120 Computing System
- Series/1 (EDX, RPS)

DATA MANAGEMENT: The System/23 Business Report/Application Development System III (BRADS III) is a data management system that enables users to develop and install applications, and expand the value of the System/23 Business Management Accounting System applications and applications written by third parties by querying the data bases and by developing new reports.

BRADS II is a field-developed program for the IBM 5120. BRADS III brings new, more powerful functions and, according to IBM, is easier to learn and use. The BRAD III program will be made available in two separate releases.

BRADS III may be used to:

- Create, maintain, and update files
- Create screen-driven data entry programs
- Retrieve data from the files using a simple query
- Create formatted reports using prompted report generation screens
- Develop complete applications using BRADS III in conjunction with System/23 Basic
- Create additional queries and reports for the Business Management Accounting System
- Obtain extensive documentation
- Produce forecasts showing expected revenue
- Investigate alternative plans using spread sheet data
- Produce reports that examine the differences (variances) between plans or between plans and actual performance
- Produce reports showing percentage relationships between rows or between columns
- Consolidate plans and evaluate performance of separate operating entities
- Combine historical and predictive data together

The spread sheet generator facility adds a powerful set of operations to the existing BRADS III capabilities to provide

the user flexibility in addressing spread sheet-type applications.

IBM 5110/5120 BASIC TO SYSTEM/23 CONVERSION AID: A licensed program designed to assist the experienced 5110/5120 programmer in converting 5110/5120 Basic application programs to System/23 Basic. The conversion can be used to reduce, but not eliminate, the need to recode Basic application programs. This program converts many 5110/5120 Basic statements to System/23 Basic, identifies 5110/5120 Basic statements that require evaluation or recoding, and provides listings of converted programs for documentation and debugging purposes.

Control and data files are not converted by the 5110/5120 Conversion Aid and must be converted manually by the user.

IBM SYSTEM/23 BUSINESS MANAGEMENT ACCOUNTING SYSTEM APPLICATIONS: IBM currently offers six cross-industry accounting application packages for the IBM System/23 Datamaster Diskette and six packages for the Datamaster Disk. Both sets of programs are identical in accounting functions and consistent user interfaces. The Datamaster accounting applications include general ledger, accounts payable, accounts receivable, payroll, inventory accounting, and billing. Highlights of these packages include:

- Applications feature either stand-alone or co-resident installation with other IBM System/23 Business Management Accounting Systems Applications.
- Built-in auditability and control characteristics through the use of familiar 5-column journals, inter-application data integrity and sequential journal numbering.
- Applications are interrelated through the passing of summarized transaction data between applications where appropriate and desired.
- Program documentation is designed to promote customer self-sufficiency during installation and operation.
- Ease-of-use enhanced through menu-driven task selection; consistent data entry programs and procedures for all applications; common file maintenance techniques including user defined field defaults; use of generally accepted accounting terminology; installation-time tailoring options that allow the user to select key functions and perform file sizing.
- An improved program update (PTD) procedure is provided to aid the operator in applying program fixes provided by IBM.
- BRADS III file definitions are provided with the applications for selected master files.
- Optional security code by application.
- Multiple-company support by installs on separate diskette(s).
- File sharing capability supporting concurrent operations when two IBM 5322s or 5324s are connected via a shared diskette unit (5246 Model 22).
- File sharing capability supporting concurrent operations if more than one Datamaster is attached to the 5247 Disk Storage Unit.

PRICING

POLICY: The System/23 Datamaster is a purchase-only system. The IBM Pilot Test Plan Agreement applies, allowing the customer to try the system prior to purchase. A separate maintenance contract is available. The Pilot Test Plan Agreement contract period is three months, with a three month extension period. Payment for the entire period is due at the commencement of the contract period or extension. Customers may purchase installed machines at any time during the contract period or extension period by executing the Agreement for Purchase. IBM maintenance coverage is included in the contract period unit charges and the extension unit charge. The plan carries a purchase option payment with ▶

IBM System/23 Datamaster

► 70 percent accrued monthly. No refund is given if the customer terminates the contract.

The standard 10 percent Educational Allowance applies to the System/23 Datamaster. It also qualifies for volume purchase discounts.

The System/23 is in IBM maintenance group D. Prime-shift maintenance is provided for any consecutive nine-hour period between 7 a.m. and 6 p.m., Monday through Friday. The premium for extended maintenance coverage is expressed in the table below as a percentage of the prime-shift maintenance charges, which are shown in the accompanying price list.

	Consecutive Hours				
	*9	12	16	20	24
Monday-Friday (until 8 a.m., Saturday)	10%	12%	14%	16%	18%
Saturday (until 8 a.m., Sunday)	4%	5%	7%	8%	9%
Sunday (until 8 a.m., Monday)	5%	7%	9%	11%	12%

*For periods outside the basic 7 a.m. to 7 p.m. prime shift.

For users without a maintenance contract, the System/23 is maintained under per-call class 2. The per-call charge for service regular hours is \$105 per hour, and during off hours the charge is \$123 per hour.

IBM's Atlanta-based Installation Support Center is staffed by systems and application specialists who will answer customer questions about all aspects of the System/23 Computing System and the System/23 Accounting Applications by means of a toll-free "hot line." The hot line hours are 8:30 a.m. to 5:00 p.m., Eastern Time, on Monday through Friday. After hours, customers may leave recorded messages which will be answered the next business day.

The hourly rate for IBM systems engineering services is \$57. SE services are offered on an "as available" basis.

IBM software for the System/23 is separately licensed and available for the monthly license fees or one-time charges listed in the "Software Prices" section that follows.

EQUIPMENT PRICES

		Purchase Price	Monthly Maint.
PROCESSORS			
5322	Computer; includes 1920-character CRT, keyboard, space for storage of up to two diskette units, secondary storage attachment, communication feature, additional printer attachment, an integral interpretive language (Basic), and main memory and diskette storage as detailed below.		
The following units are data processing models.			
120	With 64K bytes of main memory	\$3,140	\$38
123	With 64K bytes of main memory and 1.1 megabytes of diskette storage	4,505	51
124	With 64K bytes of main memory and 2.2 megabytes of diskette storage	5,870	64
140	With 128K bytes of main memory	3,765	44
143	With 128K bytes of main memory and 1.1 megabytes of diskette storage	5,130	57
144	With 128K bytes of main memory and 2.2 megabytes of diskette storage	6,495	70
The following units are data processing and word processing models.			
420	With 64K bytes of main memory	3,640	56
423	With 64K bytes of main memory and 1.1 megabytes of diskette storage	5,005	69
424	With 64K bytes of main memory and 2.2 megabytes of diskette storage	6,370	82
440	With 128K bytes of main memory	4,265	62
443	With 128K bytes of main memory and 1.1 megabytes of diskette storage	5,630	75
444	With 128K bytes of main memory and 2.2 megabytes of diskette storage	6,995	88
5324	Computer; includes processor unit, 1920-character adjustable display module, keyboard module, space for storage of up to two diskette units, secondary storage attachment, communication feature, additional printer attachment, an integral interpretive language (Basic), and main memory and diskette storage as detailed below.		
The following units are data processing models.			
120	With 64K byte of main memory	2,700	24.50
123	With 64K bytes of main memory and 1.1 megabytes of diskette storage	4,065	37.50
124	With 64K bytes of main memory and 2.2 megabytes of diskette storage	5,430	50.50
140	With 128K bytes of main memory	3,325	30.50
143	With 128K bytes of main memory and 1.1 megabytes of diskette storage	4,690	43.50
144	With 128K bytes of main memory and 2.2 megabytes of diskette storage	6,055	56.50
1000	Display Module	610	9.00
1020	Keyboard Module	370	7.00
The following units are data processing and word processing models.			
420	With 64K bytes of main memory	3,200	42.50
423	With 64K bytes of main memory and 1.1 megabytes of diskette storage	4,565	55.50
424	With 64K bytes of main memory and 2.2 megabytes of diskette storage	5,930	68.50

IBM System/23 Datamaster

EQUIPMENT PRICES

		<u>Purchase Price</u>	<u>Monthly Maint.</u>
440	With 128K bytes of main memory	3,825	48.50
443	With 128K bytes of main memory and 1.1 megabytes of diskette storage	5,190	61.50
444	With 128K bytes of main memory and 2.2 megabytes of diskette storage	6,555	74.50
1000	Display Module	610	9.00
1020	Keyboard Module	370	7.00

PROCESSOR OPTIONS

2550	Communications adapter	340	6
3770	5247 Disk Adapter	365	3
3775	5246 Diskette controller	420	1
3780	Integrated diskette controller	290	1
6300	Diskette sort	25	0
6350	Second printer attachment	290	1
RPQ 8N5008	Extended 5246 controller	780	1

MASS STORAGE

5246 011	1MB diskette unit	2,280	16
5246 012	2MB diskette unit	3,645	29
5246 021	1MB diskette unit, shared	2,380	16
5246 022	2MB diskette unit, shared	3,745	29
RPQ 8N5009	Extended distance controller, plant-installed	300	1
RPQ 8N5023	Extended distance controller, field-installed	450	1
RPQ SW2901	Cable assembly, 15-meter (50 feet)	350	1
RPQ SW2902	Cable assembly, 30-meter (100 feet)	630	1
RPQ SW2903	Cable assembly, 60-meter (200 feet)	1,055	1
5247 011	15.4MB disk storage unit	7,010	65
5247 012	30.8MB disk storage unit	8,810	75
5247 3710	Cable assembly, 4-meter	120	1
5247 3715	Cable assembly, 15-meter	165	1
5247 3720	Cable assembly, 30-meter	220	1
5247 3725	Cable assembly, 150-meter	670	1
5247 3730	Cable assembly, 300-meter	1,340	1

PRINTERS

5217	Daisywheel Printer, 60 cps	4,425	58.50
5241	Matrix printer, 80 cps	2,040	33
5242 001	Matrix printer, 160 cps	2,720	50
5242 002	Matrix printer, 40/160 cps	2,975	53

SOFTWARE PRICES

		<u>Purchase Price</u>
5715-AC1	Asynchronous Communications	\$600
5715-BC1	Binary Synchronous Communications	850
5715-CV1	5110/5120 Basic to System/23 Conversion Aid	875
5715-RG2	System/23 BRADS III	1,245
5715-WP1	System/23 Word Processing	500
5715-WP2	System/23 Word Processing II	850
	Upgrade to Word Processing II	400
5715-XX2	General Ledger for Datamaster Diskette	1,115
5715-XX3	Accounts Payable for Datamaster Diskette	1,115
5715-XX4	Accounts Receivable for Datamaster Diskette	1,115
5715-XX5	Payroll for Datamaster Diskette	1,115
5715-XX6	Inventory Accounting for Datamaster Diskette	1,115
5715-XX7	Billing for Datamaster Diskette	1,115
5715-XZ2	General Ledger for Datamaster Disk	1,630
5715-XZ3	Accounts Payable for Datamaster Disk	1,630
5715-XZ4	Accounts Receivable for Datamaster Disk	1,630
5715-XZ5	Payroll for Datamaster Disk	1,630
5715-XZ6	Inventory Accounting for Datamaster Disk	1,630
5715-XZ7	Billing for Datamaster Disk	1,630■