

Basic/Four Series

MANAGEMENT SUMMARY

With approximately 400 systems of all types installed since release of the Basic/Four family on June 1, 1971, the Basic/Four systems represent some of the earliest and most widely known minicomputer-based small business systems available today. The Basic/Four family includes Models 350, 400, and 500. Each is a disk-based system intended for interactive terminal-oriented use, employing CRT video display terminal(s) for user interface and a line printer for hardcopy output.

The distinctions between Models 350, 400, and 500 lie primarily in the configuration rules: Model 350 can have one operator terminal; Model 400 can have up to four operator terminals; and Model 500 can attach up to eight operator terminals. Basic/Four Corporation provides enhanced BASIC language programming capability and separately priced applications programs for accounts payable, payroll, sales analysis, inventory control, order entry, invoicing, accounts receivable, and general ledger.

Thus, in its appearance to the user, the Basic/Four computer can be a turnkey system that is prepared for customer delivery in a ready-to-run condition. Although many users confront the system at the turnkey business machine level, an increasing percentage of users are doing their own programming or contracting with independent organizations for applications programming. (Basic/Four is cautious about over committing itself on applications program support as it did early in the Company's history through 1972).

This Basic/Four business-oriented small computer systems are delivered on a "turnkey" basis will full application program support. Each of the Basic/Four models available from this systems house is based upon a popular minicomputer, and features a disk operating system with one or more CRT user stations.

CHARACTERISTICS

(NOTE: the technical characteristics of the processor are largely transparent to the user unless the user chooses to develop his own programs.)

MANUFACTURER: Basic/Four Corporation (a wholly owned subsidiary of MAI), 18552 Mac Arthur Blvd., Irvine, California 92707. Telephone (714) 833-9530.

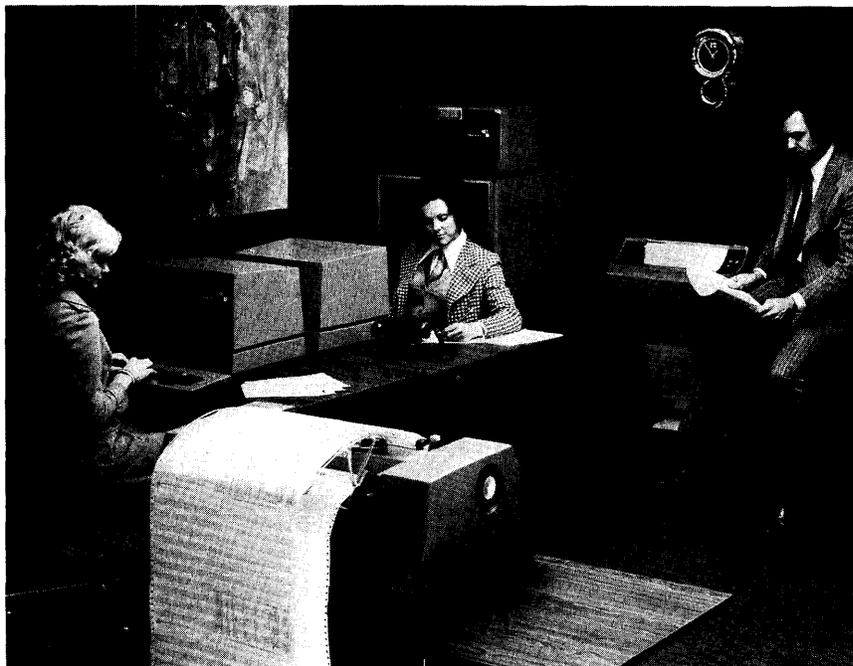
MODELS: Systems 350, 400, and 500 (based upon Microdata 1600/20 processor; earlier versions of the Basic/Four were based upon the upward-compatible microdata 820).

BASIC UNIT: 8-bit word (byte).

FIXED-POINT OPERANDS: 8-bits, 16-bits, 24-bits, or 32-bits.

FLOATING-POINT OPERANDS: No provisions made.

INSTRUCTIONS: At either the microprocessor or the user level, there are five basic 16-bit instruction formats. "Literal" instructions can have either a 4-bit operation code, a 4-bit file register designator, and an 8-bit literal which is transferred as an operand; or an 8-bit operation code plus an 8-bit literal; or 24-bit operation code plus a 12-bit literal. "Operate" commands have a 4-bit operation code, a 4-bit file register designator, a 4-bit control field designator, a 1-bit file inhibit flag, and a 3-bit destination register. Lastly, the "generic" commands consist solely of



Shown here is the Basic/Four Model 400 which includes a central processor with 16K bytes of core memory, a high capacity disc drive containing 4.2 million bytes, an industry-compatible magnetic tape unit, two printer units, and two CRT operator stations.

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▷ For application development, Basic/Four supports BASIC language programming. Also, extensive program development support is available from the manufacturer of the central processor (Microdata), although the use of Microdata's software calls for a considerable degree of expertise by the user.

In either case, the system is generally operated by the user's existing clerical staff after just a few days of training provided by Basic/Four. In addition, applications can be programmed to display step-by-step operator instructions on the CRT screen as an aid to operation of the equipment and to further reduce the skill levels required by the operator.

Users contacted by Datapro reported reactions to the system that correlate roughly to the degree of sophistication of the user, as is generally the case with any data processing system: the more sophisticated the user, the greater the degree of satisfaction. On the other hand, the less sophisticated user, unable to define his application requirements properly, is less likely on the whole, to arrive at a satisfactory solution to those requirements. Unfortunately, while the degree of data processing awareness among users is generally on the rise, it happens all too often at the small business system level—where mini-computer systems such as Basic/Four can best be utilized—that unprepared users are encountered.

Cognizant of this fact, Basic/Four has established branch education centers and a customer training program to provide relevant computer information to all levels of users (operators, programmers, and management). Those who have availed themselves of this service (or similar training) are generally more likely to be rewarded with successful installations than unsophisticated users who have not done so.

In competitive situations, the Basic/Four computer is often compared against NCR's 399; Burroughs B 700, and L 8000; IBM's System/3 Model 6, and a variety of other minicomputer-based systems from an ever-growing number of systems houses. In this latter category are to be counted other minicomputer manufacturers themselves, not the least among them Digital Equipment Corporation with its DEC Datasystem 500 Series.

Thus, for the alert small business that is ready to use computers to solve the typical applications listed above, the Basic/Four with its Genesis One sales force and Sorbus maintenance network (both of these firms, as well as Basic/Four itself, are subsidiaries of Management Assistance Inc.)—can well be an effective solution.

Generally, a prospective Basic/Four user must assure himself that he is either able to develop his own applications or is able to communicate his processing requirements to Basic/Four or an independent software organization so ▷

▶ an operation code that occupies all 16 bits. Up to 32K bytes of main memory can be directly addressed.

INTERNAL CODE: ASCII.

MAIN STORAGE

STORAGE TYPE: Magnetic core main memory, plus bipolar read-only memory (ROM) control memory.

CYCLE TIME: 1.0-microsecond main memory; 200-nanosecond control memory (ROM).

CAPACITY: 8K to 64K 8-bit bytes, in 8K increments for all models (maximum 48K bytes available for user programs exclusive of operating system requirements); 16K 16-bit words of ROM control storage.

CHECKING: None.

STORAGE PROTECTION: None in hardware. A software-implemented scheme is provided.

CENTRAL PROCESSOR

GENERAL: The processor used in the Basic/Four systems (Microdata Micro 1600/20) is fully microprogrammable, with a large number of registers, multi-level stack processing, ROM control memory, standard power failure/automatic restart, real-time clock, and built-in bootstrap loader in non-volatile ROM.

REGISTERS: Six operational registers including 16-bit accumulator(A), 16-bit auxiliary accumulator (B), 16-bit index register (X), 15-bit program counter (P), 1-bit overflow register (O), and two-bit word length control register (W).

INDIRECT ADDRESSING: Yes, for one level.

INSTRUCTION REPERTOIRE: One hundred and five instructions including 16 control, 12 multi-bit arithmetic and logical shift, 17 conditional jumps, 6 I/O, 19 inter-register, 8 stack control, 5 character string manipulation, 2 decimal arithmetic (add/subtract), and 20 memory reference instructions including jump, compare, and variable word length operations.

INSTRUCTION TIMINGS: All times are in microseconds for 1-word fixed-point operands.

Move:	20.24
Add/Subtract:	10.56/11.0
Multiply/Divide:	73.15/101.57
Compare & Branch:	11.44

INTERRUPTS: From 2 to 32.

CONTROL STORAGE: Yes

INPUT/OUTPUT CONTROL

I/O CHANNEL: All I/O is byte-oriented. A direct memory access (DMA) channel supports data transfers at up to 1 million bytes/second to/from the disc storage unit.

CONFIGURATION RULES: All Basic/Four models have a standard 2.1MB direct access storage system (one fixed and one removable disc), a medium-speed matrix printer, and at least one CRT terminal. The model 350 can have only one CRT; Model 400 can have up to 4 CRT's; and Model 500 can have up to 8 CRT's.

MASS STORAGE

2100/2000 DISC STORAGE: Provides 2.1MB/4.2MB of direct access storage on one fixed and one removable disc ▶

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▷ that a system can be tailored to his needs. Further, Basic/Four users (like computer system users in general) are well advised to define their applications carefully and to talk to existing Basic/Four users who are currently handling similar applications workloads. □

▶ cartridge (double-density data is storage implemented on Model 2200). Up to four dual-cartridge drives can be added for a total of up to 16.8 MB per subsystem. Average access time is 95 milli seconds, with a data transfer rate of 195 KB per second. (The 2100/2200 discs are built around IOMEC units).

INPUT/OUTPUT UNITS

See Peripherals/Terminals table.

COMMUNICATIONS CONTROL

8100 COMMUNICATION INTERFACE: Provides low-speed communications for terminals at speeds up to 1200 bits/second.

SOFTWARE

OPERATING SYSTEM: A BASIC Operating System Software (BOSS) package is provided for the Basic/Four models. BOSS includes a monitor, real-time executive, and the Business BASIC Interpreter. BOSS uses 16KB of main memory for dynamic segment residence. Each partition and/or additional work station requires approximately 8K bytes of additional main memory.

An Assembler for microprogramming the processor is also available, but Basic/Four does not make this assembler available to customers.

PROGRAMMING: All user programming on Basic/Four is done in Business BASIC, an enhanced version of BASIC, supported by system-oriented I/O control, formatted I/O, data file management, and decimal arithmetic subroutines.

APPLICATIONS: Basic/Four provides a number of packages for accounts payable, payroll, sales analysis, inventory control, order entry and invoicing/accounts receivable. A separate charge is made for each of these packages, and each is customized to individual user requirements.

PRICING

POLICY: Basic/Four systems are available for purchase or on third-party leases, with separate charges for maintenance. Unlimited usage of the system is permitted at no additional maintenance charge. Applications software is separately priced, as is the foreground/background "multiprogramming" feature that allows a single terminal to initiate both a foreground task and a background task for concurrent operation.

SUPPORT: Maintenance is provided by more than 900 service representatives located in more than 100 U.S. cities through Sorbus, another MAI subsidiary.

EQUIPMENT: The following typical purchase prices include controllers and adapters.

SMALL SINGLE-USER SYSTEM: Consists of an 8K-byte Model 350, 2.1MB disc drive, one CRT, and medium speed matrix printer. Purchase price is \$30,900.

TYPICAL MEDIUM-SCALE MULTIPLE USER SYSTEM: Consists of a 16-byte Model 400 with two CRT's, 4.2MB of disc storage, and a medium speed printer. Purchase price is \$43,570.

LARGE-SCALE MULTIPLE-USER SYSTEM: Consists of a 48K-byte Model 500, with foreground/background processing, six CRT's, 8.4 MB of disc storage, one industry-compatible magnetic tape unit, a high-speed printer, and an 80/96-column card reader. Purchase price is \$112,700. ■

PERIPHERALS/TERMINALS

DEVICE	DESCRIPTION	SPEED
MAGNETIC TAPE UNITS		
6100 (Wang)	Industry Compatible, 12.5 ips, 9-trk (800 bpi)	10KBS
6200 (Wang)	Industry Compatible, 12.5 ips, 7-trk (800/556 bpi)	6.95/10.0 KBS
6201 (Wang)	Industry Compatible, 12.5 ips, 7-trk (800/200 bpi)	2.5/10.0 KBS
6202 (Wang)	Industry Compatible, 12.5 ips, 7-trk (556/200 bpi)	2.5/6.95 KBS
LINE PRINTERS		
905	132-position, 64-character	200 lpm
3101/3102 (Centronics 101)	132-position, 64-character	165 cps
3401	132-position, 64 or 96-character	200 lpm
CARD EQUIPMENT		
4100	Reader, 80-column	300-400 cpm
4200	Reader, 80/96-column	300-400/ 600-800 cpm
PAPER TAPE EQUIPMENT		
5110	Reader, 1-inch, 5-8 channel	300 cps
5120	Reader, 7/8 inch, 6-channel	300 cps
5200	Punch, 11/16-1-inch 5-8 channel	75 cps
5210	Punch, 7/8-inch, 6-7 channel	75 cps
TERMINALS		
7200 (Hazeltine)	A/N CRT, 27 lines x 74 chars./line	240 cps
7300	ASR-33 Accounting Terminal	-
7301	KSR-33 Accounting Terminal	-
7400	A/N CRT, 16 lines x 32 chars./line	240 cps

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EQUIPMENT PRICES

		<u>Purchase Price</u>	<u>Monthly Maint.</u>	<u>Typical 66-mo. Lease*</u>
PROCESSOR PACKAGES				
Model 350	Basic/Four: includes 8KB memory, 2.1 MB disc, 1 CRT, and medium-speed printer	\$ 30,900	183	680
Model 400	Basic/Four like Model 350, with expansion allowed for up to four CRT's	31,900	186	702
Model 500	Basic/Four like Model 350, with expansion allowed for up to eight CRT's	32,900	189	724
MEMORY/PROCESSOR OPTIONS				
1102	8K-byte Memory Module	4,450	31	98
7202	Desk (for 4100,4200,5100,5120,5200, 5210,6180,6200,6201,6202,7200,7400)	1,235	0	6
9100	Model 350-to-400 field upgrade	1,750	9	39
9101	Model 350-to-500 field upgrade	3,500	9	77
9200	Model 400-to-500 field upgrade	1,750	9	39
9300	High speed processor option	1,950	0	43
9310	Real Time Clock (field option)	950	0	21
9500	Foreign device interface	1,500	-	-
MASS STORAGE				
900	Factory upgrade from 2.1MB to 4.2MB disc	2,000	12	44
2200	4.2MB Disc Storage	9,950	60	219
9400	Field upgrade from 2.1MB to 4.2MB disc	4,000	20	88
2900	Disc Cartridge	175	0	4
MAGNETIC TAPE				
6100,6200,6201,6202	Magnetic Tape Drives (2.5 KBS to 10.0 KBS)	7,950	68	175
PRINTERS				
905	Line Printer (substitution for standard 3100 printer), 200 lpm	5,950	16	131
3101,3102	Medium-speed printer, 165 cps	6,450	55	142
3103	Cable kit for remote 3101/3102	200	0	4
3401	High-speed printer, 200 lpm	9,950	66	219
3420	Additional 64-char. print chain for 3401	500	0	11
3421	Additional 96-char. print chain for 3401	500	0	11
9215	3401 Paper Rack (Field upgrade)	120	0	3
CARD EQUIPMENT				
4100	Card Reader, 80-column, 300-400 cpm	4,450	61	98
4200	Card Reader, 80/96-column, 600-800 cpm	4,950	61	109
PUNCHED PAPER TAPE EQUIPMENT				
5110/5120	Reader, 300 cps	4,450	26	98
5200/5210	Punch, 75 cps	4,450	26	98
TERMINALS				
7200	CRT Display, 1998 characters (Hazeltoni)	4,950	23	109
7210	CRT Keyboard	695	0	16
7212	CRT Desk	270	0	6
7300	Accounting Terminal (ASR-33)	2,500	21	55
7301	Auto Accounting Terminal (KSR-33)	3,000	24	66
7400	Executive Display Terminal, 512 characters (Car Med)	2,450	20	54
7910	25-foot cable kit	200	0	4
COMMUNICATIONS				
8100	Interface	1,950	14	43
SOFTWARE PRICE				
S-100	Foreground/Background option (occupies 700 bytes of user memory)	2,000	0	44

*Based upon third party lease-back arrangement. Maintenance is separately priced.