

## All About Small Business Computers

The small business computer market continues to grow at a phenomenal rate. In 1978 it was estimated that the value of small business computers shipped in 1977 was approximately \$930 million, and by 1982 this figure would increase to about \$3.9 billion, and that the number of small business computers shipped in 1982 would approach the 50,000 mark, almost three times the number shipped in 1977.

At a data processing conference earlier this year, a Digital Equipment Corporation spokesman projected that the number of small business systems shipped will exceed 60,000 in 1980, climb to over 500,000 in 1985, and soar to about three million by the end of the decade. He also estimated that the dollar value of units shipped will be \$3.5 billion in 1980, be approximately \$13 billion by 1985, and reach \$50 billion in 1990.

According to the spokesman, these numbers are within reach considering the buying potential. Looking at businesses with revenues of more than \$100,000, he sees over two million prospects today and only 120,000 installations, or a 6 percent saturation. Looking five years ahead, these prospects will number 2.5 million, but only 1.4 million installations will exist, or slightly more than a 50 percent saturation. Over and above these prospective customers, small business system vendors will find some 12 million companies with revenues under \$100,000, each a prospective customer for their first computer.

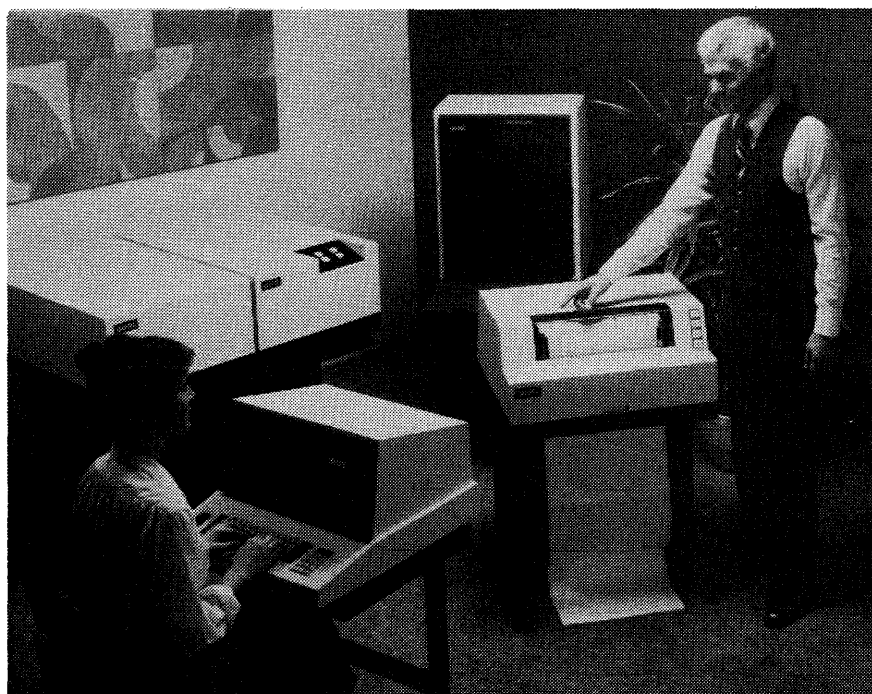
There is no doubt that the small business computer will be a common sight in most small business firms—perhaps as commonplace as an office copier or telephone switch-

**This comprehensive report features the current products of 75 small business computer suppliers. For your convenience, we've presented the characteristics, features, and prices of 270 systems in a comparison chart format. To further assist you, the report includes buying strategies and technology updates.**

board. The ever-increasing costs and complexities of doing business are forcing small businessmen to find new ways to cut their labor costs and gain tighter control over their operations, and a wisely chosen small computer system can help immeasurably in both these critical areas.

In price and performance, the small business computers span a wide range that fills the gap between conventional accounting machines at one extreme and medium-scale computer systems at the other. Though the current small business systems differ widely in their architecture, data formats, peripheral equipment, and software, they are generally characterized by purchase prices in the \$5,000 to \$100,000 range and by a strong orientation, in both their equipment and software, toward conventional business data processing applications.

In its basic configuration, today's small business computer typically consists of a central processor, a keyboard/CRT unit for data entry, a disk unit for file storage, and a serial printer for hard-copy output. Beyond that, the increasing number and diversity of systems on the market make it difficult to generalize about components, speeds, >



Qantel's line of small business computers currently ranges from the entry level Model 210 to the 1450-2 at the top of the line, with eight other models between. The Model 210 has a maximum main memory capacity of 64K bytes and 5.2 million bytes of disk storage, and supports one workstation. The Model 1450-2 offers a maximum of 1024K bytes of main memory and 300 million bytes of disk storage, and supports up to 64 workstations. Base prices range from \$11,950 for the 210 to \$69,900 for the 1450-2.

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➤ capacities, and expansion possibilities. A capsule summary of some of the key characteristics of the 270 models represented in this year's report is as follows:

- Approximately one-half of the systems offered are based on 16-bit central processors and one-third use 8-bit machines. Also represented are 12-bit, 24-bit, 32-bit, 48-bit, and 64-bit computers.
- Approximately 88 percent of the systems offer MOS memory, and all the rest use core memory.
- Minimum memory capacities range from 4K to 524K bytes. Approximately 15 percent have a minimum of 16K bytes, 14 percent a minimum of 32K bytes, 30 percent a minimum of 64K bytes, and 13 percent a minimum of 128K bytes.
- Maximum memory capacities range from 8K to 8 million bytes. Approximately 28 percent of the systems offered have a maximum capacity of 64K bytes, 14 percent a maximum of 128K bytes, and 18 percent a maximum of 256K bytes.
- To provide random-access storage for data files and programs, 73 percent of the systems offer floppy disk units, 75 percent offer cartridge disk units, 46 percent offer pack disk drives, and 23 percent offer fixed-head disk or drum units.
- To produce printed reports, 39 percent of the systems offer a serial printer and 16 percent offer a line printer as part of their basic configurations.
- To provide for communication with remote terminals and/or larger computers, 94 percent of the systems offer at least one data communications line, and about one-third can be equipped with from two to eight lines.

The business data processing systems included in this report are known by various names, such as business minicomputers, electronic accounting machines, office computers, or electronic billing computers. To simplify matters, we have chosen to use the term "small business computers" (SBCs) throughout this report.

This report is designed to bring you, in concise comparison-chart form, the up-to-date hardware and software characteristics of the small business computer systems that are currently being marketed in the United States. For guidance in selecting and acquiring the particular system that will best meet your needs, we urge you to consult Report M07-100-201, *Selection and Installation of Business Minicomputers*. Also keep in mind that DATAPRO REPORTS ON MINICOMPUTERS contains detailed individual reports on most of the popular small business computer systems, as listed in the Index or Table of Contents.

### The Small Business Computer Marketplace

The small business computer market is served by four distinct types of vendors. The first type is the "Fortune 500" companies such as Burroughs, Honeywell, IBM, NCR, and Sperry Univac, all of whom have vast product lines and resources. For these companies, the small business computer is just one of a broad line of products (although in the cases of NCR and Burroughs, business minicomputers now account for a very sizeable portion of total corporate sales revenues).

A second group consists of minicomputer manufacturers such as Digital Equipment Corporation (DEC), Data General, Computer Automation, Harris, Hewlett-Packard, Microdata, Wang Laboratories, and others. This group has watched the small business computer marketplace mushroom in size, and now wants a piece of the action. Their answer to this segment of the marketplace is a packaged configuration consisting of a minicomputer and associated peripherals from their current product line, usually accompanied by some applications software. Most minicomputer vendors also offer assemblers and compilers for the user who wants to do his own programming or solve business problems that cannot be handled by packaged software.

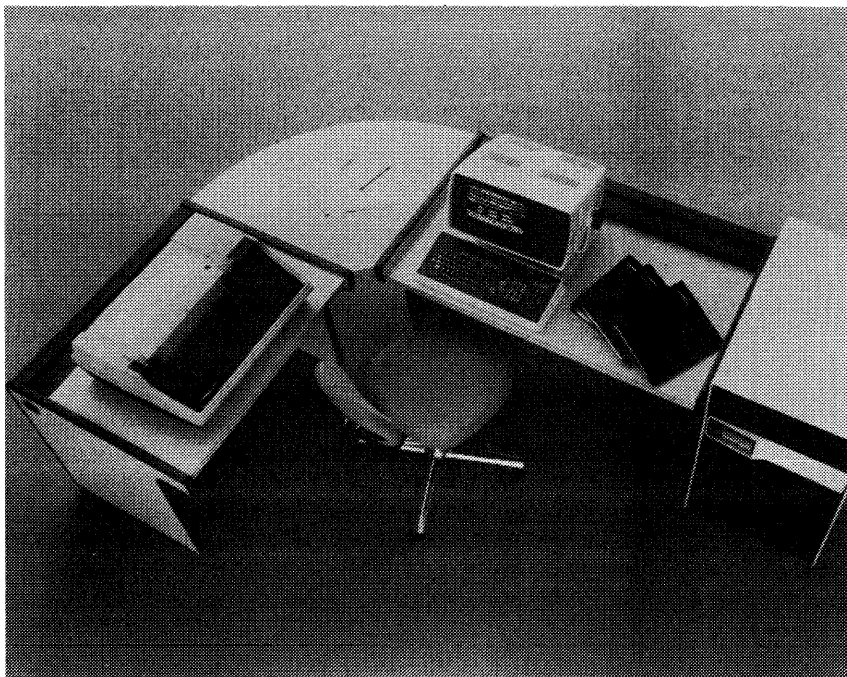
System houses or turnkey vendors, such as Mini-Computer Systems, Qantel, STC Systems, and many others, comprise the third group of suppliers of small business computers. This group is very similar to the second group except that the turnkey vendors generally buy minicomputers and/or peripheral devices from the manufacturers, package the configurations, and supply their own software. The prime appeal of a full turnkey system is that all software is written by the vendor; therefore, the user is not required to employ a high-priced programming staff. Basic/Four Corporation, which started out as a systems house using Microdata minicomputers, is now building its own central processors and is one of the leading suppliers of small business computers.

Microcomputer companies are beginning to appear on the scene as the fourth group of SBC suppliers. Companies such as Applied Data Communications, Applied Systems Corporation, Cado Systems Corporation, and others are offering microprocessor-based small business systems that sell for \$20,000 or less. This group is still in its infancy, but seems destined to be a major force in the SBC marketplace in the near future.

Most of the current members of the last two groups sell small business computers and services exclusively, and in many cases are themselves small businesses. However, what they lack in size and resources is often more than compensated for by their quick reaction time to problems, general expertise, and eagerness to satisfy.

IBM, a long-time laggard in the small business computer sector of the EDP marketplace, has climbed into its ➤

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The Compal 9000 is built around a Data General MicroNova. With prices beginning at \$19,995, the 9000 offers from 64K to 128K bytes of main memory, floppy, cartridge, and fixed-head disk storage, serial and line printers, reel-to-reel and cassette/cartridge tape drives, and supports up to 16 CRT's.

▷ accustomed position of market leadership during the last few years on the strength of three highly significant product offerings: the System/3, System/32, and System/34.

The IBM System/3, introduced in 1969, now occupies a position at the upper end of the SBC market segment. It is offered in numerous models at system purchase prices ranging from about \$40,000 to more than \$300,000. With over 40,000 installations worldwide, the System/3 ranks as one of the fastest-selling computers in history.

The IBM System/32 was unveiled in January 1975 as the smallest and lowest-priced general business computer ever announced by the industry giant. All components of the System/32—processor, main storage, keyboard, display, printer, disk storage unit, and diskette drive—are housed in a single compact, desk-sized cabinet. What's more, IBM is billing the System/32 as a "programmer-less" machine whose software, for most users, will consist entirely of preprogrammed Industry Application Packages supplied by IBM. With equipment purchase prices beginning at \$33,560 and monthly rentals (on a 3-year lease) beginning at \$714, the System/32 has already convinced thousands of small businesses that it's time to take their first step into computer usage. The availability of the System/32, backed by IBM's powerful marketing forces, has substantially enlarged the total market for small business computers and generated increased sales for both IBM and many of its competitors.

The IBM System/34, introduced in April 1977, represents the next logical step in IBM's succession of small business computer systems. As compared with the System/32, the new system features more processing power, larger memory capacity, larger disk storage capacity, and the ability to attach a number of independent multiprogram-

ming workstations to the basic system. This last feature is the most significant difference between the two systems, since the biggest single drawback to the System/32 for most potential users has been the fact that it is rigidly restricted to serving one user at a time. Thus, with the System/34, IBM has strongly endorsed the concept of multi-user, multi-terminal SBC systems of the type that have long been offered, with considerable success, by vendors such as Basic Four, Datapoint, and Microdata.

The IBM System/38, introduced in October 1978, is the largest and most powerful member of the IBM General Systems Division's expanding line of business data processing systems. Featuring interactive operation, integrated data base support, and an extended RPG programming language, the System/38 represents an attractive migration path for current users of the smaller IBM System/34 and the aging, batch-oriented System/3. The System/38 is available in 48 packaged models that offer from 512K to 1536K bytes of main memory, 64.5 to 387 million bytes of nonremovable disk storage, a diskette magazine drive, and a system console with keyboard and display.

Burroughs and NCR, the perennial leaders in the SBC marketplace until the recent IBM onslaught, are still strong contenders. Both firms offer a broad range of products backed by extensive marketing and service organizations.

Sperry Rand is the latest of the "Fortune 500" companies to announce a bold thrust into the SBC market. The firm's Sperry Univac Division, which had long lacked an effective SBC to complement its strong line of larger computers, corrected that oversight by introducing the Univac BC/7 in January 1977. A cardless system designed for turnkey operations, the BC/7 can consist of a ▷

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▷ processor with 48K, 64K, or 128K bytes of MOS main memory; an operator's console; up to six workstations, each with CRT display and optional non-impact page printer; up to 6 million bytes of floppy disk storage; up to 40 million bytes of cartridge disk storage; one or two tape drives; and one or two printers. Purchase prices for the BC/7 packaged systems range from about \$22,000 up to about \$51,000. Sperry Univac's new commitment to the SBC field is underscored by the fact that at the time of the BC/7 announcement, nearly \$25 million had already been invested in the associated organization, facilities, people, and product. Then, in June 1977, Sperry Univac purchased Varian Data Machines, a major manufacturer of minicomputers since 1967. There's little doubt that the technology developed by Varian will show up in future Univac offerings in the small business computer marketplace.

Digital Equipment Corporation, the leading builder of scientific minicomputers, offers business-oriented users its Datasystem 300 and 500 Series systems based upon the popular DEC PDP-8 and PDP-11 minicomputers. In January 1975, just 10 days after IBM introduced its System/32, DEC countered with the Datasystem 310, a complete data processing system priced at just \$14,095. The basic Datasystem 310 includes a PDP-8/A minicomputer with 8,192 12-bit words of core storage, two diskette ("floppy disk") drives, CRT display unit, and typewriter-style keyboard. Optional extras include a printer, a communications interface, and expanded main or diskette storage. DEC is marketing the Datasystem 310 in two ways: directly to end users who are prepared to write their own applications programs, and through a distributorship network of software houses that will do the applications programming for less sophisticated users. A floppy disk version of the Datasystem 310, designated the Datasystem 308, was introduced in May 1978. Employing DEC's LSI-based PDP-8 video data processor, the VT-78, the Datasystem 308 has a base price of \$12,600 including training credit and support services.

Hewlett-Packard, General Automation, Harris, and Microdata are other major suppliers of scientific minicomputers that now offer "packaged" hardware/software configurations oriented toward business data processing applications. Wang Laboratories, which has elected to specialize in serving the SBC market, is now one of the foremost suppliers of these systems.

European-made equipment is making a much greater impact upon the small business computer market than in any other segment of the U.S. computer market. ICL, Olivetti, Philips, and Nixdorf are marketing equipment which they manufacture in Great Britain, Italy, the Netherlands, and Germany, respectively.

### Buying Guidance

As with all categories of data processing equipment, the watchword in selecting a small business computer is "Buyer beware." These machines come in a wide range of

types, sizes, and capabilities—with price tags to match—and there's a great deal to be gained through systematic selection of the most appropriate system for your particular needs.

### Alternatives

There are several other alternatives you might want to consider before deciding that a small computer system is the answer to all your problems. Many small companies (fewer than 200 employees and sales of less than \$5 million) have selected programmable calculators, computer service bureaus, or time-sharing companies to provide the same or comparable services. Each user must decide which alternative provides the most cost-effective solution to his problems. Beyond that, decisions must be made regarding expandability, flexibility, ease of operation, reliability, turnaround time, compatibility with present operations, and the desirability of keeping all operations in-house. After careful consideration is given to these aspects and any other factors peculiar to your operations, an informed decision can be made as to which approach will work best in your company.

But all too often, the buyers of this class of equipment have little or no understanding of data processing principles and are likely to buy the wares of the salesman who arrives first or sells hardest.

No company should *ever* buy a computer from the first salesman who comes through the door. It's always far wiser to check out the offerings of at least a few of the other major suppliers, and you shouldn't hesitate to play one vendor against another in an effort to get the most for your money. Just remember that all promises of extra software, technical support, or other concessions should be specifically included in the final contract.

Before seriously considering the acquisition of any business minicomputer, you should demand:

- Detailed specifications of all the pertinent hardware and software.
- A full-scale demonstration of the equipment on at least one of your own principal applications—or, if that's not practical, on a demonstration program whose functions are similar enough to your own needs so that you can draw realistic conclusions about the system's processing speed and ease of programming and operation.
- A detailed proposal that spells out exactly what *equipment*, *software*, and *technical support* will be supplied, estimated processing times for each of your applications, all responsibilities of both the vendor and the buyer, and the total purchase price or monthly rental price.
- A list of users in your geographical area who are employing the system for applications similar to ▷

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➤ yours. Talk to several of these users and find out as much as you can about their experiences. While they may not be able to give you much help in developing a sophisticated comparison to other alternative systems, they *can* give you a good idea of what pitfalls to watch out for in installing and using that particular system.

A critically important area to be evaluated is *software*—the programming packages and languages used to program the computer and thereby direct its operations. It is important that you carefully investigate the available software. This investigation should include the programming languages, preprogrammed utility packages such as payrolls, inventory, control, general ledger, etc.

Vendors' claims and promises concerning the availability and capability of software should be carefully checked. This is particularly true of software that has been announced but not yet released. Vendors have frequently failed to live up to their marketing publicity.

Since SBC users typically start with no programming staffs of their own, it is important that appropriate program packages be available to fit your specific requirements. If not, you should require the vendor to take on full responsibility to write and test the initial programs you'll need. Otherwise, you'll have to either recruit and train your own programmers or pay an outside software firm to develop your programs. If not kept under strictest control, software costs can accumulate until they equal, or even exceed, hardware costs. Potential dollar savings can be quickly devoured by software costs.

The availability of reliable and qualified vendor support for both equipment maintenance and software aid is another vitally important factor in the business minicomputer environment. The limited resources generally available to small computer users make you depend heavily on your vendor for such assistance. In many cases the vendor will even design the initial system and make any required changes to his program packages for you. Thus, the ability of the vendor to render competent and continuing service in these matters is a vital concern to you.

Some vendors do not offer equipment maintenance and/or software to complement their hardware offerings. In this case, the user must deal with independent firms in order to complete the package. In one respect this is good, because overall costs may well be lower. However, when a problem occurs, the finger-pointing game can begin: one vendor blaming the other for the system's malfunction. Fortunately, this kind of reaction is in the minority, and despite the potential for problems, the multi-vendor approach can work well. If it didn't, the independent equipment maintenance and software firms would disappear, and that just isn't happening.

Most potential users of an SBC naturally raise the question of purchase versus lease. The single most important consideration is the length of time that this particular system is likely to be able to handle the data processing requirements of your company. Is there room for system expansion, with regard to both the processor and the peripherals, or is this the top of the line? In most cases, it is not a wise decision to make your first system the most powerful system offered by a particular vendor. If your company's operations expand, how will you expand the system? Will you have to acquire a new and more expensive processor? Or, worse yet, will you have to change vendors? Generally, if you are confident that a particular system can handle your data processing needs for five years or more, then purchasing the system will be advantageous. However, if you have selected the top of the line or if there are fewer than five years of potential life in the system, you will probably be better off to lease.

For a detailed discussion of all the aspects of selecting, acquiring, installing, and converting to a low-cost business data processing system, be sure to see Report M07-100-201, *Selection and Installation of Business Minicomputers*.

### The Comparison Charts

The principal characteristics of 270 small business computers from 75 vendors are presented in the accompanying comparison charts. All of these systems are currently being marketed in the United States. Nearly all of the information in the charts was supplied and/or verified by the manufacturers or U.S. suppliers during June and July 1979; their close cooperation with the Datapro Research staff in the preparation of these charts is gratefully acknowledged.

No report on today's small business computers could be totally complete. The field of suppliers is just too large and growing too fast. We have, however, made every reasonable effort to include all of the major suppliers and a high proportion of the smaller ones as well. The absence of any company's products from these comparison charts means either that the company was unknown to us or that it failed to respond to our repeated requests for information.

The comparison chart entries and their significance to potential users of small business computers are explained in the following paragraphs, together with some useful guidelines for selecting the equipment that will most effectively meet your needs.

### Data Formats

This section of the comparison charts describes the formats used to store and process data within each system.

*Word length* is the number of bits (binary digits) of data that can be stored in or retrieved from the internal storage unit during a single cycle. Some SBC's have a "fixed word" ➤

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▷ length,” meaning that each machine word or operand always has the same number of bits, digits, or characters. Others have a “variable word length,” meaning that their operands may consist of a variable number of bits, digits, or characters. In the latter case, the “word length” entry shows the number of data bits used to represent each byte or character within the variable-length operands.

### CPU

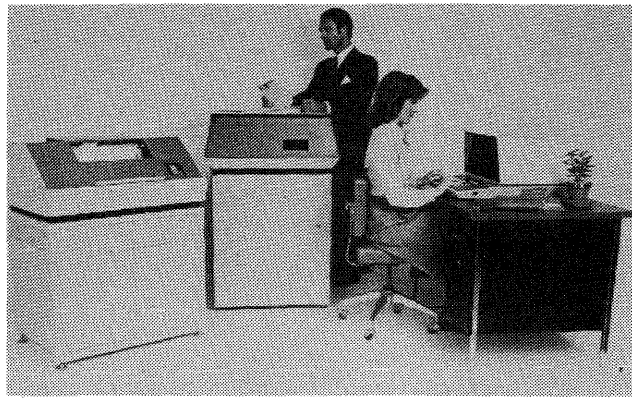
*Model* indicates the manufacturer and model of the minicomputer used as the system’s central processing unit (CPU). In some cases this entry will be identical with the entry at the top of the chart; however, in the case of a packaged turnkey system, the entries will differ.

*Add time* is the time required, in microseconds, to develop the arithmetic sum of two operands. It is a widely used measure of computer performance—but a figure that turns out to be of comparatively little importance in the selection of many SBC’s. The reason is that the overall speed of many of these systems is largely determined by the operator’s keying speed. Add times for the systems covered in our survey span the range from a few microseconds to more than half a second—yet in many applications the key question is still whether the operator can “beat the machine.” If not, the machine is probably as fast as it needs to be for these keyboard-oriented business applications. (It should be noted that for larger equipment configurations, in applications where there are two or more operators at separate terminals or where the transaction data is precoded on cards, or tape, add times—and internal speeds in general—become highly significant considerations.)

*Number of I/O ports* is an indication of the input/output capability and expandability of the system. Generally, each port allows the user to interface one peripheral device to the system, although multiple disks, CRT’s or communication lines are often interfaced to one I/O port. Two numbers are given wherever possible, the first indicating the number of ports included on the basic system and the second showing the maximum number of ports that can optionally be included. Some of the figures are quite large and indicate that the vendors took into consideration the use of multiple-device interfaces and the maximum number of terminal devices theoretically connectable. It should be noted that additional hardware, in the form of expansion chassis and power supplies, may have to be added to achieve the maximum I/O capability.

### Internal Storage

One of the principal characteristics that distinguishes computers from adding machines and conventional accounting machines is the provision of an internal storage unit capable of holding and selectively retrieving a significant quantity of data and/or instructions. This section of the comparison charts describes each system’s internal storage facilities.



The System 3000 from Mylee Digital Sciences is a 16-bit system with main memory capacities ranging from 88K to 286K bytes. The 3000 is a turnkey system for use in the distribution industry and carries a price tag of \$28,995. Standard equipment includes diskette and cartridge disk storage, a serial printer, and a CRT. The System 3000 can support up to 16 workstations.

*Type* indicates whether the system uses core or MOS (semiconductor) memory. Magnetic core storage has been widely used for more than a decade, and has proved to be fast, flexible, and reliable. Semiconductor storage, which is rapidly superseding core storage as the principal storage medium for large computers, is becoming quite popular in business minicomputers as well. When both types of memory are available for a system, we’ve made every attempt to denote the specifications for both.

*Capacity of basic system* specifies the amount of memory, in bytes, included in the basic system. The amount of internal storage is one of the most significant characteristics in appraising the power of any computer. The amount of productive processing that a computer can perform during any one run is largely determined by the number of instructions and/or operands it can hold.

*Maximum capacity, bytes* shows the largest memory size available for this model; *increment size, bytes* indicates the size of the memory modules that can be added to expand the basic system.

*Cycle/access time, microseconds.* Cycle time is the minimum time interval that must elapse between the starts of two successive accesses to any one storage location. The storage cycle time normally ranges with word length as one of the most significant individual indicators of a computer’s performance potential. However, as discussed earlier, the throughput of the equipment covered in this report is frequently determined by the operator’s keying speed rather than by the machine’s internal performance. *Access time* is the actual elapsed time between the CPU’s request for data and the time when that data is received (read). In core memory, the access time is usually one-half the cycle time; MOS memories do not display a similar relationship. ▷



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### ➤ Mass Storage Capabilities

The inclusion of mass storage devices (magnetic disk units) can greatly increase the data storage and processing capabilities of a business data processing system. Disk units enable millions of characters of information to be constantly accessible to the computer. Moreover, any desired record can be retrieved, updated, and re-recorded on the disk, usually within a fraction of a second.

By replacing or augmenting slower, less flexible file storage media such as punched cards, paper tape, or magnetic ledger cards, disk units can enable small business computers to handle applications and processing volumes that would otherwise be impossible. The principal disadvantages of disk units are their comparatively high costs and the software complexities that are encountered by users who attempt to harness their full potential. One or both of these considerations may make disk units impractical for many small computer buyers, despite the obvious appeal of disk-oriented data processing.

The diskette, or "floppy disk," is an innovation that can significantly reduce the cost of disk-oriented data processing. The diskette, or "floppy disk," is an innovation that can significantly reduce the cost of disk-oriented data processing. The diskette itself consists of a flexible Mylar disk, about 8 inches in diameter, that is permanently housed in a plastic envelope. It can serve as an input/output and/or random-access storage medium that is considerably smaller in capability and slower in performance than conventional disk units—but also far lower in cost. Introduced by IBM in 1972, diskettes and diskette drive units are now being produced by dozens of vendors and are finding their way into numerous small business computer systems, such as the IBM System/32 and DEC Datasystem 310. Recent enhancements to the floppy disk concept include more concentrated data storage and "flippies" (floppy disks that utilize both sides of the diskette), allowing more data to be stored on-line.

The other, more conventional types of mass storage devices, cartridge and disk pack drives, provide access to far more data and at significantly faster rates. Unfortunately, they also carry price tags several times higher than their floppy counterparts. Most of these units employ cartridges or disk packs that can easily be removed from the drive units and interchanged in much the same manner as magnetic tape reels.

Some cartridge-type units either use nonremovable media or use two cartridges, one fixed and the other removable. Nonremovable disks impose two important limitations. First, the system's file storage capacity is effectively limited to the amount of information that can be stored on-line. Second, disk dumps to create backup files for efficient restart procedures in case of catastrophe are not available to the user.

Interchangeable disks, conversely, provide great flexibility and make it practical to use small business computers

effectively for both sequential and random data processing applications. In sequential applications, files of virtually unlimited size can be handled through the use of multiple disk packs or cartridges.

Fixed-head (head-per-track) disk and drum units can provide much faster access to on-line data than any other type of mass storage device. The reason is that there is no loss of time due to head positioning because a head is provided for each track. The only delay is rotational delay (latency), or the time required for the desired data to move under the read/write head. But the price of this type of equipment is higher than that of the preceding varieties, and less data can be stored on-line. Fixed-head devices are used when data bases are relatively small and very rapid access to the information is required. Most SBC users are not faced with such demanding requirements, but for those who need them, the devices are offered by some vendors.

Entries in this section of the charts fall into four categories: *floppy disk drive*, *cartridge disk drive*, *pack disk drive*, and *fixed-head disk/drum*. The entries indicate which devices are standard on the basic system and which devices are standard on the basic system and which ones are optional or not available.

Some SBC's are not marketed as packaged systems; thus, the user is required to pick and choose the particular devices that best suit his needs. In this case, all peripherals are indicated as optional, and this should be reflected in a lower "basic system" price.

These entries also specify the maximum storage capacity of the particular type of unit that is directly accessible to the computer at any one time. The indicated figure may be the capacity of a single disk drive or the total capacity of two or more (typically, four to eight) drives that can be connected to one controller. The maximum capacity entries show the total diskette storage and hard disk storage that can be configured with the model.

### Workstations

Maximum number is the largest number of workstations that can be configured with this model.

Recommended number is the number of workstations that the manufacturer recommends be on line with this model for efficient performance.

Keyboard style is the type of keyboard used with the workstation. Most are alphanumeric (typewriter) style, with or without numeric keyboards.

The Workstation printer entry indicates whether or not a printer can be attached to a workstation for hard copy output, and if it is a standard or optional item.

### Input/Output Devices

Most SBC's can be equipped with additional input/output devices, the most common of these being printers, reel-to- ➤

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➤ reel or cassette tape drives, and CRT's. Chart entries depict which of these devices are standard on the basic system and which are optional or not available. Once again, non-packaged systems will have all the available I/O devices listed as optional. The comparison charts also indicated the rated speeds or sizes, or a range, available for the peripheral device wherever the information could be obtained.

Other types of I/O devices, such as punched card and paper tape equipment, are included in the other entry on the chart. This entry indicates whether this type of equipment is included in the other entry on the chart. This entry indicates whether this type of equipment is available or not, and if so, as standard equipment or optionally. In some cases the type of equipment available is specified.

Serial (character-at-a-time) printers are enjoying increased popularity with the prolific growth of the small business computer marketplace. The main reason is price; serial printers can provide excellent-quality hard-copy reports for far less money than the line-at-a-time printers used with larger computers. However, for users who require faster printing capabilities, line printers are also available for many SBC's. Serial printers generally range in speed from about 30 to 600 or more characters per second (cps), while line printers operate at speeds of 100 to 2000 or more lines per minute (lpm). The user who needs faster printed output can obviously get it, but he must be willing to pay the higher price tag associated with the line printers.

Magnetic ledger cards have long been a popular input/output medium for business/accounting minicomputers, though they are now decreasing in popularity. Their principal attraction is that they enable small businesses to retain the individual, hard-copy ledger records they have long been accustomed to using. In addition, machine-readable data can be recorded on the cards, usually on one or more vertical magnetic "stripes." Identity and status information about each account can be recorded on the appropriate card in both printed and magnetically encoded form, and the encoded data can be re-read and updated whenever necessary. Thus, magnetic ledger cards combine many of the advantages of both traditional visible records and machine-readable media such as punched cards or magnetic tape. Their chief disadvantage is that the low speed of most of the available card-handling equipment precludes the use of magnetic ledger cards in high-volume data processing applications.

CRT's are becoming increasingly important to the small business computer. Many systems now include a CRT display and its associated keyboard as the principal means of entering data into the system. In fact, on many SBC's, one or more CRT/keyboard units represent the *only* way to enter data into the system. The comparison charts indicate the capacity of the CRT, in number of lines and characters per line, whenever possible.

### Communications Capabilities

Communications capabilities enable some of the small business computers to function as "intelligent terminals" in

data communications networks. An interface equips the small computer to send and receive data over a common-carrier communications link, usually to a larger central computer installation. The small computer's internal processing and storage capabilities enable it to do some data processing locally and to handle a variety of code translation, editing, and control functions in connection with the data communications activities.

*Maximum no. of lines* indicates how many communication lines can be handled by a particular system. The types of lines are specified in the next two entries.

*Synchronous* and *asynchronous* have entries of standard, optional, or no, indicating their availability, and also a notation as to the speed of each line in bits per second (bps). Most entries will be of the type "to 4800 bps," indicating one or more transmission speeds up to a maximum of 4800 bps.

Protocols supported indicates the type of communication protocols accommodated by hardware and software for the model.

Network architecture indicates the communications network architecture support by this model. Entries may include, for example, Burroughs NDL, DEC's DECnet, or IBM's SNA.

RJE terminals emulated indicates whether there is software available from the vendor for this SBC to enable it to function as a "look-alike" for remote job entry terminals. The terminals for which support is provided is indicated. IBM 3270 emulation is listed as a separate entry as a result of an increasing amount of interest from our users concerning the emulation of the IBM 3270 Information Display System.

### Software Support

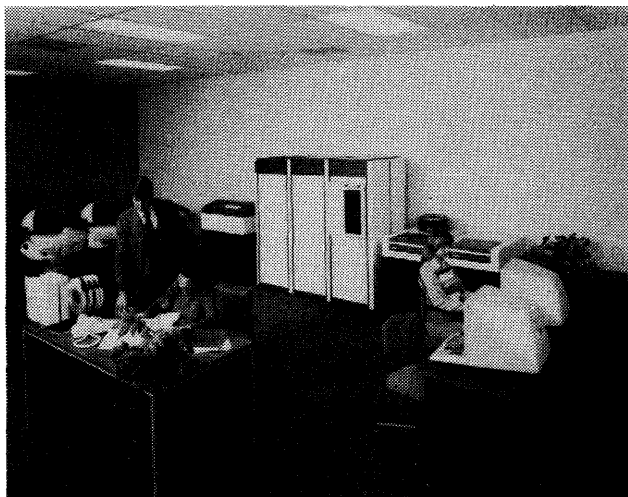
Virtually as important as the computer hardware are the software and technical support each manufacturer furnishes to aid the user in utilizing the hardware effectively. The available software (if any), together with the pricing policies for both software and support, are summarized in this section of the comparison charts.

*COBOL* (COmmon Business Oriented language), *RPG* (Report Program Generator), *FORTRAN* (FORmula TRANslator), and *BASIC* (Beginners All-purpose Symbolic Instruction Code) entries specify whether a particular compiler is available or not.

A *compiler* is a software tool designed to shift part of the program preparation task from the user to the computer itself by converting programs written in a simplified, procedure-oriented language into machine-language object programs. Compilers are now used in virtually all large and medium-scale computer installations because of their demonstrated ability to slash programming costs—and they are becoming increasingly available for the small business computers. This trend is possible because of the ➤



## All About Small Business Computers



The BTI 8000 is one of the largest models shown in the specification charts, offering from 256K to 8 million bytes of main memory and from 33M to 8,000M bytes of disk storage. The 8000 will support up to 512 workstations, line printers, and reel-to-reel tape drives. The price of a basic system is \$86,850.

➤ more powerful central processors now being used, since compilation is an intricate process that requires more storage space and processing power than the earlier small business computers provided. Where compilers are offered, however, they frequently limit the programmer to restricted subsets of the standard programming languages and/or require the use of a larger computer to perform the compilation process.

An *assembler* is a special-purpose program that uses the computer's power to facilitate the preparation of other programs. It enables the programmer to write his own program in a simplified format that uses mnemonic operation codes and symbolic operand addresses. The assembler program then converts these symbolic instructions into their machine-language equivalents, producing computer programs ready for loading and execution. Entries here indicate the availability of an assembler or, in some cases, a macro assembler.

A macro assembler is another software tool to aid the programmer and make his job a little easier. Macro routines can be called by the programmer and copied right into his program. This saves the programmer from having to recode the routine each time it is used and also eliminates the possibility of keying errors when that part of the program is entered. As usual, there is a price to pay: the use of macros usually wastes memory space.

*Other programming languages* specifies languages such as ALGOL, SNOBOL, or proprietary languages that are available from a vendor for use on a particular SBC. The key word of warning here is that if you use a language that is unique to a vendor, you will be faced with a big problem if someday you decide to change vendors. Your investment in software will be lost, since the programs will not operate on any other system without extensive conversion work.

*Multiprogramming* gives an indication as to the power of the small business computer. Entries here stipulate yes or no, and, if multiprogramming is available, the number of partitions in memory. Multiple partitions allow for concurrent operation of several programs, thus permitting more processing to be accomplished in less time.

*Maximum number of jobs that can run concurrently* indicates the number of different independent job streams that can be running in the system simultaneously. This number may or may not be the same as the number of partitions in memory, since multiple jobs may be able to function within the same partition.

*Language implemented in firmware and operating system implemented in firmware* tell the reader whether or not the language processor and/or the operating system are contained in microcode. The entries stipulate yes, partially, or no to indicate the extent of firmware implementation. An advantage to the user is that a language and/or operating system implemented in firmware frees up more memory space for the user's programs and data. Also, the microcode is usually inaccessible to the user (generally contained in read-only memory), eliminating any possible tampering with the language processor or operating system and reducing chances for error. A third advantage derived from firmware implementation is the ability to create more sophisticated and complex system functions at the hardware level. Microcode routines can be substituted for often-used subroutines, thereby increasing system performance.

*General accounting packages* indicates the availability of already-written software to handle the normal accounting functions of a company. The most common business functions include payroll, accounts payable, accounts receivable, inventory control, and general ledger accounting. If available, and if these programs can be tailored to meet the requirements of a particular company, they will allow the user to become operational in far less time and at a substantial saving in software development costs.

*Industry application areas* denotes specific areas where each vendor specializes. Turnkey vendors often take one segment of the marketplace and develop in-house expertise to the point that their hardware and software combination becomes a ready-made answer to the problems of a large class of users. Some current areas of specialization include hospitals, automobile dealers, the distribution industry, trucking firms, and the financial industry. If the vendor's specialized software can be tailored to the user's exact needs, or if the user can learn to live within the constraints of the existing software, thousands of dollars worth of programming effort can be saved. A library of pertinent applications programs can be a valuable asset when selecting an SBC. Space precludes a complete listing of available applications software in the charts, so the entries attempt to summarize and present the vendor's areas of heaviest concentration.

The availability of a *data base management system* is becoming more important to users of small business compu- ➤

## All About Small Business Computers

▷ ters. A DBMS is a software system that is intended to manage and maintain data in a nonredundant structure for the purpose of being processed by multiple applications. It organizes data elements in some predefined structure and retains relationships between different data elements within the data base. The main advantage to the user of a data base management system is that information retrieval and report generation are made much easier with one common data base.

*File access methods supported* tells the user which methods are supported by the software available for a particular system. The entries include random, sequential, indexed sequential, and direct access. These four file access methods are the most popular, but there are others in use. In most instances it is desirable to have several access methods supported so that you can choose the one most suitable for each application.

*Software separately priced* tells whether the software described in the preceding entries, and any other available software, is included in the equipment price or offered at some additional cost. Some systems have the entry "some," which usually indicates that the company provides the operating systems and language processors bundled with the hardware, but charges for applications software packages. Separate pricing of software was virtually unheard of in the computer field until June 1969, when IBM "unbundled" by placing separate price tags on many of its software products and professional services. Since then, the various manufacturers have adopted a wide range of software pricing policies. Separate pricing of software, of itself, is neither good nor bad; the buyer must carefully assess the cost of the total package consisting of the equipment and all the software and support his installation will require.

*Technical help separately priced* indicates whether the services of the manufacturer's technical support staff are included in the equipment cost or separately priced. Nearly every company that is installing a computer for the first time will need a good deal of help from the equipment maker's systems analysts, programmers, and/or instructors (or, alternatively, from an independent consulting firm). In fact, the equipment supplier does *all* the programming for the majority of small business computer installations (more than 90 percent, in the case of one major supplier). The additional cost of these services, if any, should be carefully estimated and considered in all equipment comparisons.

### Lease/Maintenance Options

*Lease plans available* indicates whether the model is available for lease from the vendor or other sources, and the term length of the lease plans.

*Maintenance plans available* depicts the type of maintenance contracts available from the vendor, or whether maintenance is handled by a third party.

### Pricing and Availability

Purchase price of basic system shows the minimum purchase price of a system equipped to perform basic business data processing functions. All of the facilities identified as "standard" in the charts (but none of the "optional" ones) are included in the listed prices. The addition of expanded storage capacities or optional input/output capabilities can lead to large price increases in nearly every case. Any additional information about the basic system or packaged system (if one exists) not covered in specific chart entries appears in the *Comments* section. For detailed pricing information, the manufacturers should be contacted directly.

*Monthly rental of basic system* specifies the monthly rental for the basic configuration of each system, as described above. All rental prices are based on a one-year lease and include equipment maintenance unless otherwise indicated. Longer-term leases are frequently available at lower monthly charges. Some systems are not available on a rental basis from the vendor and are so specified by an entry of "purchase only." In such cases, a prospective user can nearly always obtain a full-payout lease for the SBC of his choice from an independent leasing firm.

*Monthly maintenance price of basic system* shows the maintenance costs of the basic system as described above, while Monthly maintenance bundled with rental indicates whether or not the rental price given includes the cost of maintenance.

*Purchase price of additional memory modules, printers, and workstations* shows the cost of each additional unit when added to the basic system configuration, if available.

*Discounts available* indicates the types of discounts offered by the vendor for this model. This entry will vary by model for many manufacturers with multiple lines of systems.

*Date of first U.S. delivery* tells when the first production models of each system were delivered (or are scheduled to be delivered) to customers in the United States.

*Number installed in U.S. to date* shows how many systems of each type had been delivered to U.S. customers as of approximately November, 1979. Nearly all of the figures were supplied by the manufacturers themselves.

### Comments

This final entry on the comparison charts is used to explain or amplify the preceding entries and to provide other pertinent information about each system's hardware, software, pricing, or applications.

### Suppliers

Listed below, for your convenience in obtaining additional information, are the full names, addresses, and telephone numbers of the 75 suppliers whose products are listed in the comparison charts that follow. ▷

## All About Small Business Computers

**A.K. Industries, Inc.**, 23 Abbeyview Avenue, Willow Grove, Pennsylvania 19090. Telephone (215) 659-2510.

**AM Jacquard Systems**, 1639 11th Street, Santa Monica, California 90404. Telephone (201) 450-6784.

**Anderson Jacobson, Inc.**, 521 Charcot Avenue, San Jose, California 95131. Telephone (408) 263-8520.

**Applied Data Communciations**, 14272 Chambers Road, Tustin, California 92680. Telephone (714) 731-9000.

**Applied Data Processing, Inc.**, 33 Bernhard Road, North Haven, Connecticut 06473. Telephone (203) 787-4107.

**Applied Digital Communications**, 214 West Main St., Moorestown, New Jersey 08057. Telephone (609) 234-3666.

**Bainbridge Research and Development (BRD), Inc.**, 12715 Miller Road, N.E., Bainbridge Island, Washington 98110. Telephone (206) 842-4777.

**Basic/Four Corporation**, 14101 Myford Road, Tustin, California 92680. Telephone (714) 731-5100.

**BTI Computer Systems**, 870 West Maude Avenue, Sunnyvale, California 94086. Telephone (408) 733-1122.

**Burroughs Corporation**, Burroughs Place, Detroit, Michigan 48232. Telephone (313) 972-7000.

**Business Controls Corporation**, 507 Boulevard, Elmwood Park, New Jersey 07407. Telephone (201) 791-7661.

**Cado Systems Corporation**, 2771 Toledo St., Torrance, California 90503. Telephone (213) 320-9660.

**CDA, Inc.**, 470 Commercial Avenue, Palisades Park, New Jersey 07650. Telephone (201) 944-2500.

**Centurion Computer Corporation**, 1780 Jay Ell Drive, Richardson, Texas 75081. Telephone (214) 699-8400.

**Century Computer Corporation**, 4410 Spring Valley Rd., Dallas, Texas 75240. Telephone (214) 233-3238.

**Complete Computer Systems**, 159 Gibraltar Road, Horsham, Pennsylvania 19044. Telephone (215) 441-4200.

**Compudata Systems, Inc.**, 772 Post Road East, Westport, Connecticut 06880. Telephone (203) 226-4791.

**Computer Automation, Inc.**, 18651 Von Karman Avneue, Irvine, California 92713. Telephone (714) 833-8830.

**Computer Data Access, Inc.**, 1373 Broad Street, Clifton, New Jersey 07011. Telephone (201) 473-4700.

**Computer Designed Systems, Inc.**, 8085 Wayzata Boulevard, Minneapolis, Minnesota 55426. Telephone (612) 545-2855.

**Computer Hardware, Inc.**, 4111 North Freeway Boulevard, Sacramento, California 95834. Telephone (916) 929-2020.

**Computer Horizons Corporation**, 747 Third Avenue, New York, New York 10017. Telephone (212) 371-9600.

**Computer Interactions, Inc.**, P.O. Box 1354, Roslyn Heights, New York 11577. Telephone (516) 365-9833.

**Comysal Computer Systems**, 6300 Variel Avenue, Suite E, Woodland Hills, California 91367. Telephone (213) 992-4425.

**Control Data Corporation**, P.O. Box 0, Minneapolis, Minnesota 55440. Telephone (616) 853-4656.

**Data Communications Corp.**, Minicomputer Division, 3000 Directors Row, Memphis, Tennessee 38131. Telephone (901) 345-3544.

**Data General Corporation**, 15 Turnpike Rd., Westboro, Massachusetts 01581. Telephone (617) 366-8911.

**Datapoint Corporation**, 9725 Datapoint Drive, San Antonio, Texas 78284. Telephone (512) 690-7000.

**Decision Data Computer Corporation**, 100 Witmer Road, Horsham, Pennsylvania 19044. Telephone (215) 674-3300.

**Diablo Systems Inc.**, 3526 Breakwater Ct., Hayward, California 94545. Telephone (415) 786-5000.

**Digi-Log Systems, Inc.**, Babylon Road, Horsham, Pennsylvania 19044. Telephone (215) 672-0800.

**Digital Computer Controls, Inc.**, 221 Rosecrans Avenue, El Segundo, California 90245. Telephone (213) 644-9237.

**Digital Equipment Corporation (DEC)**, 146 Main St., Maynard, Massachusetts 01754. Telephone (617) 897-5111.

**Digital Scientific Corporation**, 11425 Sorrento Valley Road, San Diego, California 92121. Telephone (714) 453-6050.

**Digital Systems Corporation**, P.O. Box 158, Walkersville, Maryland 21793. Telephone (301) 845-4141.

**Dimis, Inc.**, 1060 Highway 35, Middletown, New Jersey 07748. Telephone (201) 671-1011.

**Display Data Corporation**, Executive Plaza IV, Hunt Valley, Maryland 21031. Telephone (301) 667-9211.

**Distribution Management Systems Inc.**, 11 DeAngelo Drive, Bedford, Massachusetts 01730. Telephone (617) 275-2000.

**Durango Systems, Inc.**, 10101 Bubb Rd., Cupertino, California 95014. Telephone (408) 996-1001.

**Four-Phase Sytems, Inc.**, 10700 North DeAnza Blvd., Cupertino, California 95014. Telephone (408) 255-0900.

**General Information Systems, Inc.**, 4500 Campus Drive, Suite 300, Newport Beach, California 92660. Telephone (714) 540-2959.

**General Robotics Corporation**, 57 North Main Street, Hartford, Wisconsin 53027. Telephone (414) 673-6800.

**Harris Corporation, Computer Systems Division**, 2101 Gateway Drive, Fort Lauderdale, Florida 33309. Telephone (305) 974-1700.

**Hewlett-Packard, Data Systems Division**, 11000 Wolfe Road, Cupertino, California 95014. Telephone (408) 257-7000.

**Hewlett-Packard, Desktop Computer Division**, P.O. Box 1550, Fort Collins, Colorado 80522. Telephone (303) 226-3800.

**Hewlett-Packard, GSD Division**, 19447 Prunridge Avenue, Cupertino, California 95014. Telephone (408) 725-8111.

**Honeywell Information Systems, Inc.**, Small/Medium Information Systems Division, 2000 Smith Street, Waltham, Massachusetts, 01821. Telephone (617) 895-6000.

**IBM Corporation**, General Systems Division, P.O. Box 2150, Atlanta, Georgia 30301. Telephone (404) 256-7000.

**ICL, Inc.**, Turnpike Plaza, 197 Highway 18, East Brunswick, New Jersey 08816. Telephone (201) 246-3400.

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**Infomark**, 9 North Bacton Hill Road, Frazer, Pennsylvania 19355. Telephone (215) 647-8685.

**Infotecs Computer Systems**, One Perimeter Road, Manchester, New Hampshire 03103. Telephone (603) 624-2700.

**Logical Machine Corporation**, 1294 Hammerwood Avenue, Sunnyvale, California 94086. Telephone (408) 744-1290.

**Microdata Corporation**, 17481 Red Hill Avenue, Irvine, California 92664. Telephone (714) 540-6730.

**Mini-Computer Systems, Inc.**, 399 Fairview Park Drive, Elmsford, New York 10523. Telephone (914) 592-8812.

**Mylee Digital Sciences, Inc.**, 155 Weldon Parkway, Maryland Heights, Missouri 63043. Telephone (314) 567-3420.

**NCR Corporation**, 1700 South Patterson Blvd., Dayton, Ohio 45479. Telephone (513) 449-2000.

**Nixdorf Computer Inc.**, 168 Middlesex Turnpike, Burlington, Massachusetts 01803. Telephone (617) 273-0480.

**Northern Telecom Systems Corporation**, P.O. Box 1222, Minneapolis, Minnesota 55440. Telephone (612) 932-8000.

**Northrop Data Systems**, 1160 Sandhill Avenue, Carson, California 90746. Telephone (213) 637-1533.

**Olivetti Corporation of America**, 155 White Plains Road, Tarrytown, New York 10591. Telephone (914) 631-8100.

**PolyMorphic Systems**, 460 Ward Drive, Santa Barbara, California 93109. Telephone (805) 967-0468.

**Prime Computer, Inc.**, 40 Walnut Street, Wellesley, Massachusetts 02181. Telephone (617) 237-6990.

**Programmed Control Corporation**, 2 East Broad Street, Hopewell, New Jersey 08525. Telephone (609) 466-2101.

**Q1 Corporation**, 125 Ricefield Lane, Hauppauge, New York 11787. Telephone (516) 543-7800.

**Qantel Corporation**, 3525 Breakwater Avenue, Hayward, California 94545. Telephone (415) 783-3410.

**Quodata Corporation**, 196 Trumbull Street, Hartford, Connecticut 06103. Telephone (203) 728-6777.

**Rexon Business Machines Corporation**, 5800 Uplander Way, Culver City, California 90230. Telephone (213) 641-7110.

**Sperry Rand Corporation, Sperry Univac Division**, P.O. Box 500, Blue Bell, Pennsylvania 19424. Telephone (215) 542-4011.

**STC Systems, Inc.**, Nine Brook Avenue, Maywood, New Jersey 07607. Telephone (201) 845-0500.

**Tal-Star Computer Systems, Inc.**, P.O. Box T-1000, Princeton Junction, New Jersey 08550. Telephone (609) 799-1111.

**Tandem Computers, Inc.**, 19333 Vallco Parkway, Cupertino, California 95014. Telephone (408) 996-6000.

**Terak Corporation**, 14151 N. 76th St., Scottsdale, Arizona 85260. Telephone (602) 998-4800.

**Texas Instruments, Incorporated**, P.O. Box 2909, Austin, Texas 78769. Telephone (512) 250-7309.

**Wang Laboratories, Inc.**, 1 Industrial Ave., Lowell, Massachusetts 01851. Telephone (617) 459-5000.

**Xerox Corporation**, 440 Oakmead Parkway, Sunnyvale, California 94086. Telephone (408) 733-2300.

## All About Small Business Computers

MANUFACTURER AND MODEL	A.K. Industries Inc. AKI 903	Anderson Jacobson 1500	Applied Data Communications Event 1000	Applied Data Communications Event 2000	Applied Data Communications Event 3000
<b>WORD LENGTH, BITS</b>	8-bit byte	8	8-bit byte	8-bit byte	8-bit byte
<b>CPU</b>					
Model	Intel Z-80	—	Intel 8080A	Intel 8080 A	Intel 8080 A
Add time, microseconds	—	4	2 (1 byte)	2 (1 byte)	2 (1 byte)
No. of I/O ports on basic sys. and max.	—	1; 8	1; 256	1; 256	1; 256
<b>INTERNAL STORAGE</b>					
Type	MOS, RAM	MOS and core	MOS	MOS	MOS
Capacity of basic system, bytes	4K (ROM); 48K (RAM)	64K	48K	65K	65K
Maximum capacity, bytes	64K	64K	65K	65K	65K
Increment size, bytes	16K	—	16K	—	—
Cycle/access time, microseconds	0.4/0.25	1.0/0.8	2	2	2
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Standard	Standard	2 std.; 8 opt.	2 std.; 8 opt.	2 std.; 8 opt.
Maximum diskette storage	—	4 units; 2.56M bytes	—	—	1.2M bytes
Cartridge disk drive	No	Opt.; 10M bytes (2)	Std.; 10M bytes (4)	Std.; 10M bytes (4)	Std.; 10M bytes (4)
Pack disk drive	No	No	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	2 units; 20M bytes	—	—	12.5/25M bytes
<b>WORKSTATIONS</b>					
Maximum number connectable	—	4	8	8	8
Recommended maximum number	—	3	—	—	—
Keyboard style	Type.; num. key	Typewriter	Type.; num. key. Optional	Type.; num. key. Optional	Type.; num. key. Optional
Workstation printer	—	—	—	—	—
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	No	Std.; 30-120 cps	Opt.; to 1200 cps	Opt.; to 1200 cps	Opt.; to 1200 cps
Line printer	Std.; 80 lpm	Opt.; 125-300 lpm	Opt.; to 1400 lpm	Opt.; to 1400 lpm	Opt.; to 1400 lpm
Reel-to-reel tape drive	No	No	Opt.; 8 units	Opt.; 8 units	Opt.; 8 units
Cassette/cartridge tape drive	No	No	Optional	Optional	Optional
CRT	Std.; 24x80 chars.	Opt.; 1920 char.	Std.; to 1920 char.	Std.; to 1920 char.	Std.; to 1920 char.
Other	None	—	Paper tape	Paper tape	Paper tape
<b>COMMUNICATIONS</b>					
Maximum no. of lines	—	8	8	8	8
Synchronous	Opt.; 4800 bps	No	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps
Asynchronous	Std.; 9600 bps	Std.; 300-9600 bps	Opt.; 19.2K bps	Opt.; 19.2K bps	Opt.; 50,000 bps
Protocols supported	Bisync	None	Bisync	Bisync	Bisync
Network architecture supported	—	—	—	—	—
RJE terminals emulated	—	—	—	—	—
IBM 3270 emulation	—	No	—	—	—
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	Yes	No	No	No	No
BASIC	Yes	Yes	Micro DOS/BASIC	Micro DOS/BASIC	Micro DOS/BASIC
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	None	TSL, ESP	None	None	None
Multiprogramming	Yes; 16	Yes; 4 partitions	Yes; 8 partitions	Yes; 8 partitions	Yes; 8 partitions
Max. no. of jobs run concurrently	—	—	—	—	8
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially (opt.)	Partially (opt.)	Partially (opt.)
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Whsl., act'g.	Accounting	None	None	None
Database management system	Yes	No	Yes	Yes	Yes
File access methods supported	Seq., random	Random, sequential	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	No	See comments	Yes	Yes	Yes
Technical help separately priced	Yes	See comments	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	Contact vendor	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	—	—	—	—	—
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	10,000	See comments	—	—	—
Monthly rental of basic system, \$	350	—	—	—	—
Monthly maint. price of basic system, \$	—	—	—	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:	—	—	—	—	—
additional memory module, \$	—	—	—	—	—
additional workstations, \$	—	—	—	—	—
additional printer, \$	—	—	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	January 1979	NA	September 1978	September 1978	September 1978
Number installed to date	NA	NA	NA	NA	NA
<b>COMMENTS</b>	Turnkey systems; no programmers' or DP Personnel req'd.; 300 lpm printer opt.	Contact vendor for prices on software, tech. help, rentals, leases, and purchase price	Includes microproc- essor with 84K RAM, 1K PROM, dual single-density floppy disks, 60-cps tele- printer and work- station desk		

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MANUFACTURER AND MODEL	Applied Data Processing Resource/100	Applied Digital Communications 102	Applied Digital Communications 103	Applied Digital Communications 202	Applied Digital Communications 400
WORD LENGTH, BITS	16	16	16	16	12
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	DG Nova 3 1.35 (1 word) 8, 16	DG Micro Nova 2.4 (1 word) 9, 18	Interdata 5/16 1.2 1; 256	DG Nova 3 1.2 12 std.	DEC PDP-8 1 Unibus
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	Core 64K 256K 32K 1.0/0.5	MOS, RAM 64K 64K — NA/0.16	MOS, RAM 64K 64K — 0.6/0.4	MOS, RAM 64K 256K 16K 0.16	MOS, Core 8K 32K 4K 1/1
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	No No No Std.; 320M bytes No 320M bytes	2 std.; 6 max. — No No No —	2 std. — No No No —	Optional — Std.; 10M bytes No No —	Opt.; 1M byte 4M bytes Optional Optional Optional —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	16 16 Type.; num. key. Optional	— — Type.; num. key —	— — Type.; num. key. —	— — Type.; num. key. —	— — Type.; num. key —
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Std.; 165, 330 cps Opt.; 300, 600 lpm Optional No Std.; 27x74 char. Optional	Std.; 120 cps Optional No No Std.; 1920 char. Paper tape & card	Std.; 120 cps Opt.; 600 lpm Optional Optional Std.; 1920 char. Paper tape & card	Std.; 120 cps Opt.; to 600 lpm Optional No Std.; 1920 char. Paper tape & card	Std.; 120 cps Opt.; to 600 lpm Opt.; DECTape No Optional Paper tape & card
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	7 No Std.; 1200 bpc Bisync — 2780 No	— No No Bisync — — No	256 Optional Optional Bisync None None No	64 No No None None None No	NA No No None None None No
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No No No Yes Yes Extended BASIC Yes 16 No No Yes Dist.; mfg. Yes Rand., seq., ind. Yes Yes	Yes No Yes Yes Yes No Yes No No Yes Manufacturing No Rand., seq., index Yes Yes	No No Yes Yes Yes No Yes Partially Yes General purpose No Seq., rand. Yes Yes	Yes No Yes Yes Yes Algol Yes — No No Yes No Seq., rand. Yes Yes	No No Yes Yes Yes None No No Yes Manufacturing No Seq., rand. Yes Yes
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	Contact vendor —	Contact vendor —	Contact vendor —	Contact vendor —	Contact vendor —
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	32,500 NA 325 NA 4,500 (65K bytes) 2,400 8,000 (300 lpm) NA June 1976 NA	23,750 — — — — — — — 1978 NA	22,645 — — — — — — — 1978 NA	31,500 — — — — — — — 1978 NA	12,500 — — — — — — — NA NA
COMMENTS	Resource/100 Extended Operating Systems are said to meet 95% of most users' needs for business applications	For pricing and availability contact vendor	Accounting system	Same as Model 102, but faster, greater capacity; price includes accounting software	



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MANUFACTURER AND MODEL	Applied Digital Communications 401	Basic Four Corporation Model 200	Basic Four Corporation Model 410	Basic Four Corporation Model 510	Basic Four Corporation Model 610
<b>WORD LENGTH, BITS</b>	16	8-bit byte	8-bit byte	8-bit byte	8-bit byte
<b>CPU</b>					
Model	Interdata 8116E	BFC 1345	BFC 1345	BFC 1345	BFC 1345
Add time, microseconds	0.75 (1/2 word)	7.4	7.4	7.4	7.4
No. of I/O ports on basic sys. and max.	4; 256	—	11 (above req.)	11 (above req.)	11 (above req.)
<b>INTERNAL STORAGE</b>					
Type	Core	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	40K	40K	64K	64K
Maximum capacity, bytes	256K	64K	128K	256K	192K
Increment size, bytes	8K	8K, 16K, 24K	24K, 32K	32K, 64K	32K, 64K, 128K
Cycle/access time, microseconds	0.75/0.275	0.6/0.4	0.6/0.4	0.6/0.4	0.6/0.4
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Optional	No	No	No	No
Maximum diskette storage	—	—	—	—	—
Cartridge disk drive	Std.; 10M bytes	No	No	No	Standard
Pack disk drive	No	No	No	Std.; 20M bytes	Std.; 35M bytes
Fixed-head disk/drum	No	Std.; 14M bytes	Std.; 14M bytes	No	No
Maximum disk storage	—	20M bytes	40M bytes	300M bytes	300M bytes
<b>WORKSTATIONS</b>					
Maximum number connectable	—	2	8	16	16
Recommended maximum number	—	—	—	—	—
Keyboard style	Type.; num. key.	Type.; 10-key pad	Type.; 10-key pad	Type.; 10-key pad	Type.; 10-key pad
Workstation printer	—	Std.; 120 cps	Std.; 120 cps	Std.; 120 cps	Std.; 160 cps
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Std.; 120 cps	Std.; 120 cps	Std.; 120 cps	Std.; 120 cps	Std.; 160 cps
Line printer	Opt.; to 600 lpm	Opt.; 150 lpm	Opt.; 150-600 lpm	Opt.; 300 lpm	Opt.; 150-600 lpm
Reel-to-reel tape drive	Optional	No	Opt.; 10KBS	Opt.; 10KBS	Opt.; 10KBS
Cassette/cartridge tape drive	Cass.; optional	Cart.; 2.3M bytes	Cart.; 9.2M bytes	Cart.; 9.2M bytes	Cart.; 9.2M bytes
CRT	Std.; 1920 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	Paper tape	No	No	No	No
<b>COMMUNICATIONS</b>					
Maximum no. of lines	256	1	8	16	16
Synchronous	Optional	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps
Asynchronous	Optional	Std.; 9600 bps	Std.; 9600 bps	Std.; 9600 bps	Std.; 9600 bps
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	—	Business Info. Net.	Business Info. Net.	Business Info. Net.	Business Info. Net.
RJE terminals emulated	—	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	—	No	No	No	No
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	Yes	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	No	No	No	No
Other programming languages	None	None	None	None	None
Multiprogramming	No	No	Yes; 8 partitions	Yes; 8 partitions	Yes; 18 partitions
Max. no. of jobs run concurrently	—	4	12	12	24
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	—	Bus., med., dist.	Gen. business, med.	Gen. business, med.	Bus., med., dist.
Database management system	TOTAL	No	Gen. business, med.	Gen. business, med.	No
File access methods supported	Seq., random	Seq., random	Seq., random	Seq., random	Seq., random
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	Contact vendor	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	—	Third party	Third party	Third party	Third party
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	49,300	24,990	32,500	44,000	51,400
Monthly rental of basic system, \$	—	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Monthly maint. price of basic system, \$	—	260	280	—	424
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	—	2,000 (8K bytes)	2,500 (16K bytes)	2,500 (16K bytes)	3,900 (32K bytes)
additional workstations, \$	—	6,400	6,400	6,400	6,400
additional printer, \$	—	—	7,900 (150 lpm)	11,900 (300 lpm)	7,900 (150 lpm)
Discounts available	—	NA	NA	NA	NA
Date of first U.S. delivery	1978	January 1978	1978	1980	1978
Number installed to date	—	9,000 (all models)	9,000 (all models)	9,000 (all models)	9,000 (all models)
<b>COMMENTS</b>					
	Acctg. software and NC tape verification system, NC tape generation, NC tape translation, inc. plotter		Performance upgrade package; memory expansion to 256K, increase no. of comm. lines to 12. Available June 1981.		

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MANUFACTURER AND MODEL	Basic Four Corporation Model 730	BRD Dolphin	BRD Porpoise	BRD Small Fry	BTI 5000/ES
WORD LENGTH, BITS	8-bit byte	8-16-64	8-16-64	8-16-64	16
CPU Model	BFC 1350	Motorola 6800	Motorola 6800	Motorola 6800	BTI 5010
Add time, microseconds	3	100 (15 digits)	100 (15 digits)	100 (15 digits)	20
No. of I/O ports on basic sys. and max.	9 (above req.)	2	2	2	7
INTERNAL STORAGE Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	96K	8K	4K	4K	64K
Maximum capacity, bytes	256K	64K	64K	64K	64K
Increment size, bytes	32K, 64K, 128K	8K	4K	4K	None
Cycle/access time, microseconds	0.6/0.4	3/100	3/100	3/100	0.65/0.3
MASS STORAGE Floppy disk (diskette) drive	No	Std.; dual	Std.; dual	No	No
Maximum diskette storage	—	1.2M bytes	0.6M bytes	—	NA
Cartridge disk drive	No	No	No	No	No
Pack disk drive	Std.; 150M bytes	No	No	No	10MB
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	300M bytes	—	—	—	10MB
WORKSTATIONS Maximum number connectable	32	1	1	1	32
Recommended maximum number	—	1	1	1	24
Keyboard style	Type.; 10-key pad	Typewriter/ 10 key	Typewriter/ 10 key	Std.	Any
Workstation printer	Std.; 300 cpm	Std.	Std.	Std.	Opt.
INPUT/OUTPUT DEVICES Serial printer	Opt.; 80, 120, 160 cps	Std.; 45 cps/abs. tab	Std.; 30 cps	Std.; 30 cps	Optional
Line printer	Std.; 300 lpm	No	No	No	Opt.; 300-900 lpm
Reel-to-reel tape drive	Opt.; 10KBS	No	No	No	Opt.; to 72KBS
Cassette/cartridge tape drive	Opt.; 9.2M bytes	No/No	No/No	No/No	No
CRT	Std.; 24x80 char.	Opt.; 1920 char.	Opt.; 1920 char.	No	Optional
Other	No	—	—	—	—
COMMUNICATIONS Maximum no. of lines	32	1	1	1	4 std.; 32 opt.
Synchronous	Opt.; 9600 bps	No	No	No	No
Asynchronous	Std.; 9600 bps	Std.; 1200 bps	Std.; 30 bps	Std.; 30 bps	9600 bps
Protocols supported	Bisync	Programmable	Programmable	Programmable	User-programmable
Network architecture supported	Business Info. Net.	No	No	No	NA
RJE terminals emulated	2780/3780	No	No	No	NA
IBM 3270 emulation	No	No	No	No	No
SOFTWARE SUPPORT COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	No	B.A.L.	B.A.L.	B.A.L.	No
Other programming languages	None	ALPHABASE/ERAM	ALPHABASE/ERAM	ALPHABASE	No
Multiprogramming	Yes, 36 partitions	No	No	No	No
Max. no. of jobs run concurrently	40	1	1	1	32
Language complemented in firmware	No	B.A.L. (fully)	B.A.L. (fully)	B.A.L. (fully)	Partially
Op. sys. implemented in firmware	Partially	Fully	Fully	Fully	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Gen. business, med.	Util., acct.	Util., acct.	Banking	Mfg., bus., school
Database management system	No	Yes	Yes	NA	Yes
File access methods supported	Seq., random	Ind. Seq., Linked list	Ind. Seq., Linked list	NA	Rand., seq., KSAM
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	No
LEASE/MAINTENANCE OPTIONS Lease plans available	Contact vendor	2 to 5 years	2 to 5 years	2 to 5 years	Purchase only
Maintenance plans available	Third party	On-call, factory	On-call, factory	On-call, factory	24 hours
PRICING & AVAILABILITY Purchase price of basic system, \$	95,100	15,000 to 25,000	10,000 to 15,000	6,500	29,950
Monthly rental of basic system, \$	Contact vendor	375	250	200	Purchase only
Monthly maint. price of basic system, \$	766	100	75	50	345
Monthly maint. bundled with rental, \$	—	No	No	No	NA
Purchase price of: additional memory module, \$	3,900 (32K bytes)	800 (8K)	400 (4K)	400 (4K)	—
additional workstations, \$	6,400	NA	NA	NA	765
additional printer, \$	11,900 (300 lpm)	—	—	—	—
Discounts available	NA	Education/ 15%	Education/ 15%	Education/ 15%	Quantity
Date of first U.S. delivery	1978	July 1977	July 1977	March 1979	September 1979
Number installed to date	9,000 (all models)	250 (all systems)	—	—	750 (all models)
COMMENTS		Complete small bus. sys. with integrated word processing and data base mgmt. software; over 20 applications. Packager complete.	See BRD-Dolphin	Ledger-card based acctg. sys. ROM based removable program cartridges; programmable also from keyboard in B.A.L. or high level alphasbase	Up to 32 users terminals concurrently

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MANUFACTURER AND MODEL	BTI 5000	BTI 8000	Burroughs B 80	Burroughs B 730/B 720	Burroughs B 801
WORD LENGTH, BITS	16	32	8	64	64
CPU					
Model	BTI 5010	BTI 8110 (8 CPU's)	B80/20/30/40/50	B 731	B 800
Add time, microseconds	20	3.2	60	430	—
No. of I/O ports on basic sys. and max.	7	4 to 32	8, 11	6, 8	7
INTERNAL STORAGE					
Type	MOS	Core	MOS	MOS	MOS
Capacity of basic system, bytes	64K	256K	32K/60K	32K	32K
Maximum capacity, bytes	64K	8M	60K/124K	80K	80K
Increment size, bytes	None	128K	4K/16K	8K	8K
Cycle/access time, microseconds	0.65/0.3	0.67/0.4	1.0/0.5	1.0/0.5	1.0/0.5
MASS STORAGE					
Floppy disk (diskette) drive	No	No	Opt.: 6M bytes	Opt.: 243K bytes	Opt.: 486 bytes
Maximum diskette storage	NA	NA	27.6M bytes	36.8M bytes	36.8M bytes
Cartridge disk drive	No	No	Opt.: 27.6M bytes	Opt.: 36.8M bytes	Opt.: 36.8M bytes
Pack disk drive	30 to 132MB	Std.: 33MB	No	No	No
Fixed-head disk/drum	No	No	Opt.: 37.6M bytes	No	No
Maximum disk storage	132MB	8,000MB	65.6MB	36.8MB	36.8MB
WORKSTATIONS					
Maximum number connectable	32	512	—	—	—
Recommended maximum number	24	128	—	—	—
Keyboard style	Any	Any	Type.; num. key	Type.; num. key	Type.; num. key
Workstation printer	Opt.	Optional	Optional	Optional	Optional
INPUT/OUTPUT DEVICES					
Serial printer	Optional	No	Std.: 60, 180 cps	Std.: 60 cps	Std.: 120 cps
Line printer	Opt.: 300-900 lpm	Opt.: 300-900 lpm	Opt.: 160, 250 lpm	Opt.: 85-400 lpm	Opt.: 85-400 lpm
Reel-to-reel tape drive	Opt.: to 72KBS	Opt.: 200KBS	No	Opt.: 10KBS	Opt.: 10KBS
Cassette/cartridge tape drive	No	No	Std.: 1KBS/No	Opt.: 1KBS/No	Opt.: 1KBS/No
CRT	Optional	Optional	Std.; 8x32 char.	Opt.	Opt.
Other	—	—	—	—	—
COMMUNICATIONS					
Maximum no. of lines	8 std.; 32 opt.	8 std.; 160 opt.	4	1	4
Synchronous	No	No	Opt.: to 4800 bps	Opt.: to 9600 bps	Opt.: to 9600 bps
Asynchronous	9600 bps	19.2 bps	Opt.: to 9600 bps	Opt.: to 9600 bps	Opt.: to 9600 bps
Protocols supported	User-programmable	User-programmable	Bisync; BDLC	Bisync.; BDLC	Bisync.; BDLC
Network architecture supported	NA	NA	Async., sync.	Async., sync.	NDL
RJE terminals emulated	NA	NA	—	IBM 3780	—
IBM 3270 emulation	No	No	—	—	—
SOFTWARE SUPPORT					
COBOL	No	Yes	Yes	Yes	Yes
RPG	No	No	Yes	Yes	Yes
FORTRAN	No	Yes	No	No	No
BASIC	Yes	Yes	No	No	No
Assembler	No	Yes	No	No	No
Other programming languages	No	PASCAL	DSC/MPL/NDL	AEL	AEL, MPL, NDL
Multiprogramming	No	Demand-paged VM	Yes; to 3 programs	Yes; see comments	Yes
Max. no. of jobs run concurrently	32	16	1	1	1
Language complemented in firmware	Partially	No	Fully	Fully	Fully
Op. sys. implemented in firmware	Partially	Partially	Fully	Fully	Fully
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Mfg., bus., school	Mfg., gen. bus., educ.	Whisl., dist., med., fin.	All business	All bus. acctg. applic.
Database management system	Yes	Yes	No	No	No
File access methods supported	Rand., seq., KSAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand. seq., ISAM	Rand., seq., ISAM
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	No	No	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	Purchase only	Purchase only	1, 3, 5-year	1, 3, 5-year	1, 3, 5-year
Maintenance plans available	24 hours	24 hours	On-site contract, on-call	On-site contract, on-call	On-site contract, on-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	38,950	86,850	17,520	26,500	35,045
Monthly rental of basic system, \$	Purchase only	Purchase only	669 (1-yr. lease)	997 (1-yr. lease)	1,047 (1-yr. lease)
Monthly maint. price of basic system, \$	345	650	129	—	198
Monthly maint. bundled with rental, \$	NA	NA	—	—	—
Purchase price of: additional memory module, \$	765-1,395	9,000 (128K bytes)	412 (4K bytes)	—	—
additional workstations, \$	8,950-23,700	—	—	3,515 (data entry)	—
additional printer, \$	—	3,950	9,270 (160 lpm)	8,755 (85 lpm)	28,840 (750 lpm)
Discounts available	Quantity	Quantity	Dollar volume	Dollar volume	Dollar volume
Date of first U.S. delivery	March 1978	April 1980	April 1976	May 1973	April 1977
Number installed to date	750 (all models)	NA	Over 4000	NA	NA
COMMENTS	Up to 32 users terminals concurrently	Variable resource architecture permits expansion to main-frame capacity; up to 160 users		AEL programs can execute concurrently with RPG or COBOL programs; B 730 supports up to 4 Direct Data Entry stations	

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MANUFACTURER AND MODEL	Burroughs B 810/B 820	Burroughs B1815	Burroughs B1855	Burroughs B1885	Burroughs B1860 CMS
WORD LENGTH, BITS	64	16	16	16	16
CPU Model	B 800	B 1800	B 1800	B 1800	B 1800
Add time, microseconds	—	—	—	—	—
No. of I/O ports on basic sys. and max.	7	1; 14	1; 14	1; 14	1; 14
INTERNAL STORAGE Type	MOS	MOS/LSI	MOS/LSI	MOS/LSI	MOS/LSI
Capacity of basic system, bytes	64K	131K	524K	524K	64K
Maximum capacity, bytes	131K	262K	1,048K	1,048K	512K
Increment size, bytes	8K	131K	262K	262K	262K
Cycle/access time, microseconds	1.0/0.5	1.2	—	—	—
MASS STORAGE Floppy disk (diskette) drive	Opt.; 2M bytes	Opt.; 486K bytes	Opt.; 486K bytes	Opt.; 486K bytes	Opt.; 486K bytes
Maximum diskette storage	368M bytes	1M	1M	1M	1M
Cartridge disk drive	Opt.; 368M bytes	74.4M bytes	74.4M bytes	74.4M bytes	74.4M bytes
Pack disk drive	Opt.; 521M bytes	Opt.; 697.6M bytes	Opt.; 697.6M bytes	Opt.; 697.6M bytes	Opt.; 697.6M bytes
Fixed-head disk/drum	No	No	Opt.; 11.8M	Opt.; 11.8M	Opt.; 11.8M
Maximum disk storage	521.6MB	697.6M	697.6M	697.6M	697.6M
WORKSTATIONS Maximum number connectable	—	16	16	16	16
Recommended maximum number	—	—	—	—	—
Keyboard style	Type.; num. key	Typewriter	Typewriter	Typewriter	Typewriter
Workstation printer	Optional	Yes	Yes	Yes	Yes
INPUT/OUTPUT DEVICES Serial printer	Opt.; 120 cps	No	No	No	No
Line printer	Opt.; 85-750 lpm	Opt.; 85-1500 lpm	Opt.; 85-1500 lpm	Opt.; 85-1500 lpm	Opt.; 85-1500 lpm
Reel-to-reel tape drive	Opt.; 10KBS	Opt.; 10-120KBS	Opt.; 10-120KBS	Opt.; 10-120KBS	Opt.; 10-120KBS (4)
Cassette/cartridge tape drive	Opt.; 1KBS/No	Cass.; 1KBS	Cass.; 1KBS	Cass.; 1KBS	Cass.; 1KBS
CRT	Opt.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	—	Card	Card	Card	Card
COMMUNICATIONS Maximum no. of lines	4	4	4	32	8 std.; 24 opt.
Synchronous	Opt.; to 9600 bps	Opt.; 50,000 bps	Opt.; 50,000 bps	Opt.; 50,000 bps	Opt.; 50,000 bps
Asynchronous	Opt.; to 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps
Protocols supported	Bisync., BDLC	Bisync, BDLC	Bisync, BDLC	Bisync, BDLC	Bisync, BDLC
Network architecture supported	NDL	BNA	BNA	BNA	BNA
RJE terminals emulated	—	HASP	HASP	HASP	HASP
IBM 3270 emulation	—	—	—	—	—
SOFTWARE SUPPORT COBOL	Yes	Yes	Yes	Yes	Yes
RPG	Yes	Yes	Yes	Yes	Yes
FORTRAN	No	Yes	Yes	Yes	Yes
BASIC	No	Yes	Yes	Yes	Yes
Assembler	No	No	No	No	No
Other programming languages	AEL, MPL, NDL	NDL, UPL, AEL	NDL, UPL, AEL	NDL, UPL, AEL	NDL, UPL, AEL
Multiprogramming	Yes	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	—	—	—	—	—
Language complemented in firmware	Fully	Fully	Fully	Fully	Fully
Op. sys. implemented in firmware	Fully	Fully	Fully	Fully	Fully
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	All bus. acctg. applic.	All business acct'g.	All business acct'g.	All business acct'g.	All business acct'g.
Database management system	No	Yes	Yes	Yes	Yes
File access methods supported	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS Lease plans available	1, 3, 5-year	1-, 5-year	1-, 5-year	1-, 5-year	1-, 5-year
Maintenance plans available	On-site contract, on-call	Various	Various	Various	Various
PRICING & AVAILABILITY Purchase price of basic system, \$	40,450	60,000	91,928	133,000	90,000
Monthly rental of basic system, \$	1,210 (1-yr. lease)	1,075 (5-yr.)	2,145 (5-yr.)	3,132 (5-yr.)	2,500 (5-yr.)
Monthly maint. price of basic system, \$	233	360	500	600	485
Monthly maint. bundled with rental, \$	—	Yes	Yes	Yes	Yes
Purchase price of: additional memory module, \$	—	10,000	5,000	7,000	7,000
additional workstations, \$	—	2,700	2,700	2,700	2,700
additional printer, \$	—	9,300	9,300	9,300	9,300
Discounts available	Dollar volume	No	No	No	No
Date of first U.S. delivery	April 1977	June 1978	June 1978	June 1978	Second qtr. 1977
Number installed to date	NA	NA	NA	NA	NA
COMMENTS					150 cpm card punch, 300-1400 cpm card readers opt.

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MANUFACTURER AND MODEL	Business Controls System 80/8	Business Control System 8/11	Cado Systems Corporation System 20	Cado Systems Corporation System 20/IV	Cado Systems Corporation System 40
WORD LENGTH, BITS	12	16	8-bit byte	8-bit byte	8-bit byte
CPU					
Model	DEC PDP-81A, E	DEC PDP-11/23 to 70	Intel 8080A	Intel 8085A	Intel 8080A
Add time, microseconds	2.6-3.0 (word)	8.24 (8 digits)	1.2 (1 byte)	1.3 (1 byte)	2.0 (1 byte)
No. of I/O ports on basic sys. and max.	2; 12	4; 24	2	4	2
INTERNAL STORAGE					
Type	Core	COS, MOS, bipolar	MOS	MOS	MOS
Capacity of basic system, bytes	32K	64K	5K	16K	5K
Maximum capacity, bytes	256K	1M	9K	48K	9K
Increment size, bytes	16K	16K	4K	16K	4K
Cycle/access time, microseconds	1.2/0.6	0.98/0.49	0.45/0.45	0.50/0.45	0.45/0.45
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 670K bytes	Opt.; 2048K bytes	Std.; 3.6M bytes	Std.; 4.8M bytes	Std.; 3.6M bytes
Maximum diskette storage	—	—	—	—	—
Cartridge disk drive	40M bytes	Std.; 1.4B bytes	Opt.; 19M bytes	Opt.; 1.9M bytes	Opt.; 19M bytes
Pack disk drive	No	Opt.; 1400M bytes	No	Opt.; 10M bytes	No
Fixed-head disk/drum	No	Opt.; 8M bytes	Optional	—	Opt.; 10M bytes
Maximum disk storage	—	—	—	—	—
WORKSTATIONS					
Maximum number connectable	—	—	—	—	—
Recommended maximum number	—	—	—	—	—
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	—	—	—	—	—
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 180 cps	Opt.; 180 cps	Std.; 150 cps	Std.; 150 cps	Optional
Line printer	Opt.; 250-600 lpm	Opt.; 2500-1200 lpm	No	No	Std.; 150 cps
Reel-to-reel tape drive	Opt.; 36KBS	Opt.; 10-72KBS	Optional	Optional	No
Cassette/cartridge tape drive	Cass.; 3KBS	Opt.; 4KBS	Optional	Optional	Opt.; cassette
CRT	Std.; 24x80 char.	Std.; 960-1584 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	Card, p. tape	Opt.	—	—	Opt.
COMMUNICATIONS					
Maximum no. of lines	16	64	1	2	1
Synchronous	Opt.; to 4800 bps	Opt.; to 50K bps	Std.; to 9600 bps	Std.; to 9600 bps	Std.; to 9600 bps
Asynchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Std.; to 9600 bps	Std.; to 9600 bps	Std.; to 9600 bps
Protocols supported	IBM 2780	Bisync; SDLC	Bisync	Bisync	Bisync
Network architecture supported	—	DECnet	—	—	—
RJE terminals emulated	—	—	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	—	—	—	—	—
SOFTWARE SUPPORT					
COBOL	No	Yes	No	No	No
RPG	No	Yes	No	No	No
FORTRAN	Yes	Yes	No	No	No
BASIC	Yes	Yes	Yes (COBOL)	Yes (CADOL)	Yes (CADOL)
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	DIBOL, COM	DIBOL, DECform	None	None	None
Multiprogramming	Yes; 15 partitions	Yes; 63 partitions	No	Yes; 4 partitions	No
Max. no. of jobs run concurrently	—	—	—	—	—
Language complemented in firmware	No	No	Partially	Partially	Partially
Op. sys. implemented in firmware	No	No	Partially	Partially	Partially
General accounting packages	—	Yes	Yes	Yes	Yes
Industry application areas	Retail, mfg., dist.	Retail, mfg., dist.	Retail, mfg., dist.	Retail, mfg., dist.	Retail, mfg., med.
Database management system	No	DBMS-11	Yes	Yes	Yes
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., index seq.	Rand., index seq.	Rand., index seq.
Software separately priced	No	No	Yes	Yes	Yes
Technical help separately priced	No	No	No	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	—	—	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	—	—	—	—	—
PRICING & AVAILABILITY					
Purchase price of basic system, \$	29,990	40,000	13,995	17,795	11,995
Monthly rental of basic system, \$	600	800	NA	Third party	Third party
Monthly maint. price of basic system, \$	—	—	—	—	130
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	—	—	—	—	—
additional workstations, \$	—	—	—	—	—
additional printer, \$	—	—	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	1971	1976	NA	June 1978	NA
Number installed to date	NA	120	NA	NA	NA
COMMENTS		Supports all DEC operating systems, sorts, etc.			

## All About Small Business Computers

MANUFACTURER AND MODEL	Cado Systems Corporation System 40/IV	Centurion III	Centurion 100	Centurion 200	Centurion Series 6000
WORD LENGTH, BITS	8-bit byte	8	8	8	8
CPU Model	Intel 8085A	CPU V	CPU V	CPU V	CPU V
Add time, microseconds	1.3 (1 byte)	3.0 (16 bit)	3.0 (16 bit)	3.0 (16 bit)	1.6 (16 bit)
No. of I/O ports on basic sys. and max.	4	512 used, 4K max.	512 used; 4K max.	512 used; 4K max.	512 used, 4K max.
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	16K	32K	16K	16K	16K
Maximum capacity, bytes	48K	64K	64K	64K	256K
Increment size, bytes	16K	16K or 32K	16K or 32K	16K or 32K	16K, 32K, 64K, 128K
Cycle/access time, microseconds	0.50/0.45	0.8/0.2	0.8/0.2	0.8/0.2	0.8/0.2
MASS STORAGE					
Floppy disk (diskette) drive	Std.: 4.8M bytes	Opt.: 3.6M bytes	Std.: 3.6M bytes	No	Opt.: 3.6M bytes
Maximum diskette storage	—	—	3; 3.6 M bytes	—	—
Cartridge disk drive	Opt.: 19M bytes	Opt.: 81.6M bytes	No	Std.: 15.6M bytes	Opt.: 12,000MB
Pack disk drive	No	Opt.: 81.6M bytes	No	Std.: 15.2M bytes	Opt.: 72,000MB
Fixed-head disk/drum	Opt.: 10M bytes	No	No	No	No
Maximum disk storage	—	16; 81.6M bytes	—	4; 2.08M bytes	64; up to 72G bytes
WORKSTATIONS					
Maximum number connectable	—	12	4	8	40
Recommended maximum number	—	8	2	4	32
Keyboard style	Type.; num. key	Data entry, num. key	Data entry, num. key.	Data entry, num. key.	Data entry, num. key
Workstation printer	—	Optional	Standard	Standard	Optional
INPUT/OUTPUT DEVICES					
Serial printer	Optional	Opt.: 65-600 cps	Std.: 65-600 cps	Std.: 65-600 cps	Opt.: 65-600 cps
Line printer	Std.: 300 lpm	Opt.: 125-600 lpm	Opt.: 125-600 lpm	Opt.: 125-600 lpm	Opt.: 125-600 lpm
Reel-to-reel tape drive	Optional	No	No	No	Opt.: 9K cps
Cassette/cartridge tape drive	Opt.: cassette	No	No	No	No
CRT	Std.: 24x80 char.	Std.: 24 x 80 char.	Std.: 24 x 80 char.	Std.: 24 x 80 char.	Std.: 24 x 80 char.
Other	Opt.	No	No	No	No
COMMUNICATIONS					
Maximum no. of lines	2	4	2	4	8
Synchronous	Std.; to 9600 bps	No	No	No	Opt.: 1.2-9.6K bytes
Asynchronous	Std.; to 9600 bps	Opt.: 300 bps	Opt.: 300 bps	Opt.: 300 bps	Optional
Protocols supported	Bisync	None	None	None	Bisync
Network architecture supported	—	None	None	None	None
RJE terminals emulated	2780/3780	None	None	None	IBM 2780/3780
IBM 3270 emulation	—	No	No	No	No
SOFTWARE SUPPORT					
COBOL	No	No	No	No	Yes (ANSI 74)
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes (CADOL)	No	No	No	Yes
Assembler	Yes	Yes	yes	yes	Yes
Other programming languages	None	CPL, SMART, JCL	CPL, SMART, JCL	CPL, SMART, JCL	CPL, SMART, JCL
Multiprogramming	Yes; 4 partitions	yes (1-16 part.)	Yes (1 to 6 part.)	Yes (1-6 part.)	Yes (1-64 part.)
Max. no. of jobs run concurrently	—	16	6	6	64
Language complemented in firmware	Partially	No	No	No	No
Op. sys. implemented in firmware	Partially	No	No	No	No
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Retail, mfg., dist.	Any	Any	Any	Any
Database management system	Yes	No	No	No	No
File access methods supported	Rand., index seq.	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	Yes	Some	Some	Some	Some
Technical help separately priced	No	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	Contact vendor	Third party	Third party	Third party	Third party
Maintenance plans available	—	On-call	On-call	On-call	On-call
PRICING & AVAILABILITY					
Purchase price of basic system	20,500	28,403	13,988	25,517	18,048
Monthly rental of basic system	Third party	—	—	—	—
Monthly maint. price of basic system	154	NA	NA	NA	NA
Monthly maint. bundled with rental	—	—	—	—	—
Purchase price of:					
additional memory module	—	2,060 (32K)	2,060 (32K)	2,060 (32K)	2,060 (32K)
additional workstations	—	2,195	2,195	2,195	2,195
additional printer	—	—	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	June 1978	1975	First qtr. 1979	Second qtr. 1979	Third qtr. 1979
Number installed to date	NA	Over 900	150	100	NA
COMMENTS	Operates 4 devices	Price includes printer; English oriented JCL; large selection of applications	Price includes printer; English oriented JCL; large selection of applications	Price includes printer; English oriented JCL; large selection of applications	Price includes printer; English oriented JCL; large selection of applications



## All About Small Business Computers

MANUFACTURER AND MODEL	Century Computer Century 300	Century Computer Century 400	Century Computer Century 700	Century Computer Century 900	Compal 8100
WORD LENGTH, BITS	8, 16	8, 16	8, 16	8, 16	8
CPU					
Model	Century 200	Century 400	Century 400	Century 400	Intel 8080
Add time, microseconds	1.4 (16 bits)	1.4 (16 bits)	1.4 (16 bits)	1.4 (16 bits)	2.4
No. of I/O ports on basic sys. and max.	2; 256	2; 256	2; 256	2; 256	3; 4
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	32K	64K	96K	16K	56K
Maximum capacity, bytes	64K	240K	256K	512K	56K
Increment size, bytes	32K, 64K	32K, 64K	32K, 64K	32K, 64K	—
Cycle/access time, microseconds	.4/.2	.4/.2	.4/.2	.4/.2	1.6/.4
MASS STORAGE					
Floppy disk (diskette) drive	No	No	No	No	Std.; 630K bytes
Maximum diskette storage	—	—	—	—	1.2M bytes
Cartridge disk drive	10M bytes	10M bytes	10M bytes	10M bytes	No
Pack disk drive	80M bytes	80M bytes	80M bytes	80M bytes	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	—	—	—	—
WORKSTATIONS					
Maximum number connectable	4	8	20	32	1
Recommended maximum number	4	8	20	32	1
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Opt.; 4	Opt.; 8	Opt.; 20	Opt.; 32	1, 1, 2
INPUT/OUTPUT DEVICES					
Serial printer	No	Opt.; 165 cps	No	No	Std.; 55-150 cps
Line printer	Std.; 300 lpm	Opt.; 300, 600 lpm	Opt.; 300 lpm	Opt.; 600 lpm	Optional
Reel-to-reel tape drive	Opt.; 36KBS	Opt.; 36KBS	Opt.; 36KBS	Opt.; 56KBS	No
Cassette/cartridge tape drive	No	No	No	No	Optional
CRT	Std.; 24x80char.	Std.; 24x80 char.	Std.; 24x80char.	Std.; 24x80 char.	Std.; 1920 char.
Other	No	No	No	No	No
COMMUNICATIONS					
Maximum no. of lines	4	8	20	32	3
Synchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; 1200/9600 bps
Asynchronous	19,200 bps	19,200 bps	19,200 bps	19,200 bps	Std.; 300 bps
Protocols supported	—	—	—	—	—
Network architecture supported	No	No	No	No	—
RJE terminals emulated	IBM 3780	IBM 3780	IBM 3780	IBM 3780	IBM 2780/3780
IBM 3270 emulation	No	No	No	No	—
SOFTWARE SUPPORT					
COBOL	No	No	No	No	Yes (opt.)
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	Yes (opt.)
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	CPL	CPL	CPL	CPL	PASCAL
Multiprogramming	Yes, 4 partitions	Yes, 8 partitions	Yes, 20 partitions	Yes, 32 partitions	No
Max. no. of jobs run concurrently	4	8	20	32	One program
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	—	—	—	—	Dist., mfg., retail
Database management system	Yes	Yes	No	No	Yes
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	All types
Software separately priced	Yes	Yes	Yes	Yes	No
Technical help separately priced	Yes	Yes	Yes	Yes	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	Contact vendor	Contact vendor	Contact vendor	Contact vendor	1 to 5 years
Maintenance plans available	On-site, on-call, factory, third party	On-site, on-call, factory, third party	On-site, on-call, factory, third party	On-site, on-call, factory, third party	—
PRICING & AVAILABILITY					
Purchase price of basic system, \$	Contact vendor	Contact vendor	Contact vendor	Contact vendor	10,995
Monthly rental of basic system, \$	—	—	—	—	—
Monthly maint. price of basic system, \$	Purchase only	Purchase only	Purchase/lease	Purchase/lease	55
Monthly maint. bundled with rental, \$	—	—	—	—	No
Purchase price of:	Yes	Yes	Yes	Yes	—
additional memory module, \$	—	—	—	—	—
additional workstations, \$	—	—	—	—	6,995
additional printer, \$	—	—	—	—	2,100 (150 cps)
Discounts available	—	—	—	—	No
Date of first U.S. delivery	OEM	OEM	OEM	OEM	—
Number installed to date	June 1975	June 1975	June 1975	June 1975	October 1976
Comments	NA	NA	NA	NA	400

## All About Small Business Computers

MANUFACTURER AND MODEL	Compal 8200	Compal 9000	Complete Computer Systems # 10	Complete Computer Systems # 11	Complete Computer Systems # 12
<b>WORD LENGTH, BITS</b>	8	16	16 + 1	16 + 1	16 + 1
<b>CPU</b>					
Model	Zilog Z-80	DG microNova 602	DG microNova 3/12	DG Nova 3/12	DG Nova 3/12
Add time, microseconds	2: 4	2.4	0.7 (1 word)	0.7 (1 word)	0.7 (1 word)
No. of I/O ports on basic sys. and max.	3: 4	5: 36	3: 34	4: 34	10; 4; 34
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS or core
Capacity of basic system, bytes	56K	64K	64K	64K	64K
Maximum capacity, bytes	112K	128K	256K	256K	256K
Increment size, bytes	8K	32K	32K	32K	32K
Cycle/access time, microseconds	1.6/ .4	.96/ .16	0.70/0.35	0.70/0.35	0.70/0.35
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Std.; 630K bytes	Opt.; 1.2M bytes	Opt.; 1.2M bytes	Opt.; 1.2M bytes	Opt.; 1.2M bytes
Maximum diskette storage	1.2M bytes	1.2M bytes	—	—	—
Cartridge disk drive	No	Std.; 10M bytes	Std.; 10M bytes	Std.; 10M bytes	Std.; 10M bytes
Pack disk drive	No	No	No	No	No
Fixed-head disk/drum	Opt.; 30M bytes	opt.; 25M bytes	No	No	No
Maximum disk storage	—	—	—	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	1	16	16	16	16
Recommended maximum number	1	4	16	16	16
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	1, 1, 2	1, 3, 16	Opt.; 2	Opt.; 2	Opt.; 2
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Std.; 55-150 cps	Std.; 150 cps	Std.; 60 cps	Std.; 120 cps	Std.; 180 cps
Line printer	Optional	Opt.; 300 lpm	Opt.; 300-600 cps	Opt.; 300-600 lpm	Opt.; 300-600 lpm
Reel-to-reel tape drive	No	Optional	Opt.; 300-600 cps	Opt.; 60,000 cps	Opt.; 60,000 cps
Cassette/cartridge tape drive	Optional	Optional	No	No	No
CRT	Std.; 1920 char.	Std.; 1920 char.	Std.; 1920 char.	Std.; 1920 char.	Std.; 1920 char.
Other	—	—	—	—	—
<b>COMMUNICATIONS</b>					
Maximum no. of lines	3	16	16	16	16
Synchronous	Opt.; 1200/9600 bps	Opt.; 1200/2400 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps
Asynchronous	Std.; 300 bps	Std.; 1200/2400 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps
Protocols supported	Asyn, bisync	Asyn, bisync	Asyn, bisync	Asyn, bisync	Asyn, bisync
Network architecture supported	—	—	IBM 360/370	IBM 360/370	IBM 360/370
RJE terminals emulated	IBM 2780/3780	IBM 2780/3780	Yes	RJE 80 (2789/3780)	RJE 80 (2780/3780)
IBM 3270 emulation	—	—	—	Yes	Yes
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes (opt.)	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	Yes (opt.)	Yes (opt.)	Yes	Yes	Yes
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	PASCAL	PASCAL	"CREATE" DBMS	"CREATE" DBMS	"CREATE" DBMS
Multiprogramming	No	Multi-user 3	Yes	Yes	Yes
Max. no. of jobs run concurrently	One program	3 or 4 programs	16	16	16
Language complemented in firmware	No	No	Partially	Partially	Partially
Op. sys. implemented in firmware	Partially	No	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Dist., mfg., retail	Dist., mfg., retail	Various	Various	Various
Database management system	Yes	Yes	Yes	Yes	Yes
File access methods supported	All types	All types	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	No	Yes	Yes	Yes	Yes
Technical help separately priced	No	No	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	1 to 5 years	1 to 5 years	5 yr. lease/purchase	5 yr. lease/purchase	5 yr. lease/purchase
Maintenance plans available	On-site	On-site	On-site	On-site	On-site
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	11,995	19,995	30,940	33,605	33,825
Monthly rental of basic system, \$	No	NA	425	462	492
Monthly maint. price of basic system, \$	60	167	280	310	325
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of:					
additional memory module, \$	300 (8K)	1,850 (64K)	4,000 (64K bytes)	4,000 (64K bytes)	4,000 (64K bytes)
additional workstations, \$	8,995	2,290	1,950	1,950	1,950
additional printer, \$	3,000 (55 cps)	3,900 (180 cps)	5,450 (600 cps)	5,450 (600 cps)	5,450 (600 cps)
Discounts available	No	No	Govt.; 10%	Govt.; 10%	Govt.; 10%
Date of first U.S. delivery	November 1979	December 1979	1974 (Nova 2/10)	1974 (Nova 2/10)	1975 (Nova 2/10)
Number installed to date	12	NA	NA	NA	NA
<b>COMMENTS</b>			Property management, rent and maintenance control, multi-entity financials	CREATE operates in shared-logic mode with business application; word processing with variable text fill-in and	Inventory control incl. LIFO, FIFO, avg. lot ctrl., serial no. ctrl., bulk qty.

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MANUFACTURER AND MODEL	Complete Computer Systems # 14	Complete Computer Systems # 22	Complete Computer Systems # 26	Computdata Systems (DEC 300 Series)	Computdata Systems (DEC 500 Series)
WORD LENGTH, BITS	16 + 1	16 + 1	16 + 1	16 + 2	16 + 2
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	DG Nova 3/12 0.7 (1 word) 4; 34	DG Nova 3/12 0.7 (1 word) 10; 34	DG Nova 3/12 0.7 (1 word) 10; 34	DEC PDP-11/23/34 2.03 1; 8	DEC PDP-11/34/70 0.30-1.20 1; 64
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS or core 64K 256K 32K 0.70/0.35	MOS or core 96K 256K 32K, 64K 0.7/0.35	MOS or core 128K 256K 32K, 64K 0.7/0.35	MOS 128K 256K 32K 0.98, 0.725/0.51, 0.635	Core 128K 512K 32K 0.98/0.36
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Opt.; 1.2M bytes — Std.; 10M bytes No No —	Opt.; 1.2M bytes — Std.; 30M bytes No No —	Opt.; 1.2M bytes — Std.; 40M bytes No No —	Opt.; 310K bytes 8 units; 224MB Std.; 2.5 or 5M bytes Opt.; 28 bytes No —	Opt.; 310K bytes 8 units; 1,408MB Std.; 10M bytes Opt.; to 176M bytes Opt.; 512M bytes —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	16 16 Type.; num. key. Opt.; 2	16 16 Type.; num. key. Std.; 1; opt., 2	16 16 Type.; num. key. Std.; 1; opt., 2	8 8 Type.; /num. key Opt.	32 32 Type.; num. key Standard
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Std.; 180 cps Opt.; 300-600 lpm Opt.; 60,000 cps No Std.; 1920 char.	Std.; 180 cps Opt.; 300 lpm Opt.; 60,000 cps No Std.; 1920 char. opt.	Std.; 60-180 cps Opt.; 300 lpm Opt.; 60,000 cps No Std.; 1920 char. Opt.	Std.; 180 cps Opt.; 300-600 lpm Opt.; 800/1600 bpi No/No Std.; 1280 char.	Std.; 180 cps Opt.; 300, 600 lpm Opt.; 800/1600 bpi No/No Std.; 1920 char.
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	16 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 RJE 80 (2780/3780) Yes	16 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 RJE 80 (2780/3780) Yes	16 opt.; to 9600 bps opt.; to 9600 bps Bisync IBM 360/370 RJE 80 (2780/3780) Yes	32 Opt.; 2400 bps Std.; 9600 bps Bisync None 2780 No	64 Opt.; 2400 bps Std.; 9600 bps Bisync DECnet 2780 Yes
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No No Yes Yes Yes Yes "CREATE" DBMS Yes 16 Partially Partially Yes Various Yes Rand., seq., index Yes Yes	No No Yes yes Yes Yes "CREATE" DBMS Yes, dynamic 16 Partially Partially Yes Various Yes Multi-index, rand. Yes Yes	No No Yes yes yes yes "CREATE" DBMS Yes, dynamic 16 Partially Partially Yes Various Yes Multi-index, rand. Yes Yes	No No Yes No No DIBOL Yes 8 No No Yes Various Yes Seq., rand., index seq. Yes Yes	Yes Yes Yes No No DIBOL Yes 32 No No Yes Various Yes Seq., rand., index seq. Yes Yes
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	5 yr. lease/purchase On-site	5 yr. lease/purchase On-site	5 yr. lease/purchase On-site	3-8 years On-site contract	3-8 years On-site contract
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	45,275 622 375 No 4,000 (64K bytes) 1,950 5,450 (600 cps) Govt.; 10% 1976 NA	63,605 874 — — 4,000 (64KB) 1,950 5,450 (600 cps) Govt.; 10% 1976 NA	77,495 1,064 — — 4,000 (64K) 1,950 5,450 (600 cps) Govt.; 10% 1976 NA	26,000 350 — No — — Quantity 1975 200+	60,000 1,250 — No — — Quantity 1976 30+
COMMENTS	HMO membership control, mail-order prospect control; CREATE report generator	CREATE operates in shared-logic mode with business application, word processing with variable text fill-in and preprinted forms fill-in	Mfg. and construction systems oriented to job costing estimating, projected completion cost, labor, cost ctr efficiency		

## All About Small Business Computers

MANUFACTURER AND MODEL	Computer Automation SyFA System 200	Computer Automation SyFA System 300	Computer Automation SyFA System 1000	Computadata Systems (IBM Series/1)	CDA, Inc. The Parts Handler DG IT Series
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b>					
Model	Naked Mini; LSI 2-60	Naked Mini; LSI 2-60	Naked Mini; LSI 2-60	IBM 4952/4955	DG micro Nova
Add time, microseconds	—	—	—	4.2	5
No. of I/O ports on basic sys. and max.	2; 4	2; 4	2; 32	4; 56	—
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	64K	64K	64K	64K
Maximum capacity, bytes	64K	304K	304K	256K	64K
Increment size, bytes	—	64K	64K	32K	—
Cycle/access time, microseconds	0.7/0.5	0.7/0.5	0.7/0.5	0.66/0.50	.96/.50
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	No	No	No	Opt.; 2.5M bytes	Opt.; 630K bytes
Maximum diskette storage	—	—	—	8 units; 512MB	630K bytes
Cartridge disk drive	Standard	Standard	Standard	Opt.; to 64M bytes	Std.; 10-20M bytes
Pack disk drive	Optional	Optional	Opt.; 1760M bytes	No	No
Fixed-head disk/drum	No	No	No	No	Opt.; 12.5M bytes
Maximum disk storage	NA	NA	1760M bytes	—	12.5M bytes
<b>WORKSTATIONS</b>					
Maximum number connectable	4	4	32	32	5
Recommended maximum number	2	2	32	12	5
Keyboard style	Std.; num. key.	Std.; num. key.	Std.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Optional	Optional	Optional	Optional	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Std.; 150 cps	Std.; 150 cps	Optional	Opt.; 120 cps	No
Line printer	Optional	Optional	Std.; 600 lpm	Opt.; 155 lpm	Std.; 180 cps
Reel-to-reel tape drive	No	No	Optional	No	No
Cassette/cartridge tape drive	No	No	No	No/No	No
CRT	Standard	Standard	Standard	Std.; 1920 char.	Standard
Other	No	No	No	—	No
<b>COMMUNICATIONS</b>					
Maximum no. of lines	—	—	—	256	5
Synchronous	Std.; 4800 bps	Std.; 4800 bps	Std.; 4800 bps	Opt.; 2400 bps	Optional
Asynchronous	4; 9600 bps	4; 9600 bps	8; 9600 bps; opt. 32	Std.; 9600 bps	Standard
Protocols supported	Async, bisync	Async, bisync	Async, bisy., SDLC	—	Bisync
Network architecture supported	No	No	Opt.; SNA	None	X.25
RJE terminals emulated	Optional; 3780	Optional; HASP	Optional; 3780, HASP	None	2780/3780
IBM 3270 emulation	Optional	Optional	Optional	No	Yes
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	Yes	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	Yes
BASIC	No	No	No	No	Yes
Assembler	No	No	No	Yes	Yes
Other programming languages	SYBOL	SYBOL	SYBOL	No	ALGOL, PASCAL
Multiprogramming	Yes	Yes	Yes	Yes	No
Max. no. of jobs run concurrently	6	6	53	12	5
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	Yes	Yes
Industry application areas	Insur., utilities	Insur., utilities	Insur., utilities	Various	Auto parts dist.
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Seq., rand., ISAM	Rand., ISAM
Software separately priced	No	No	No	Yes	Yes
Technical help separately priced	—	—	—	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	Purchase only	Purchase only	Purchase only	3-8 years	5 years
Maintenance plans available	Contact vendor	Contact vendor	Contact vendor	On-site contract	On-site
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	29,000	36,000	102,500	23,000	26,900
Monthly rental of basic system, \$	—	—	—	440	NA
Monthly maint. price of basic system, \$	349	369	840	—	175
Monthly maint. bundled with rental, \$	NA	NA	NA	No	No
Purchase price of:					
additional memory module, \$	—	—	—	—	NA
additional workstations, \$	—	—	—	—	2,500
additional printer, \$	—	—	—	—	4,500 (180 cps)
Discounts available	—	—	—	No	Quantity
Date of first U.S. delivery	NA	NA	NA	1977	March 1979
Number installed to date	NA	NA	NA	30+	10
<b>COMMENTS</b>					

## All About Small Business Computers

MANUFACTURER AND MODEL	CDA, Inc. The Parts Handler DG MP/100 Series	CDA, Inc. The Parts Handler DG Nova Series	Computer Designed Systems Adviser I-1432	Computer Designed Systems Adviser I-2880	Computer Designed Systems Adviser IV-3160
WORD LENGTH, BITS	16	16	16	16	16
CPU Model	DG MP/100	DG Nova 4 series	1/64 CDS	1/64 CDS	1VM-640 CDS
Add time, microseconds	5	5	25 (5 digits)	25 (5 digits)	10 (5 digits)
No. of I/O ports on basic sys. and max.			1-4	1-8	1-16
INTERNAL STORAGE					
Type	MOS	MOS	Core, MOS	Core, MOS	Core, MOS
Capacity of basic system, bytes	64K	128K	64K	64K	64K
Maximum capacity, bytes	64K	256K	96K	128K	192K
Increment size, bytes	—	64K	32K	32K	32K
Cycle/access time, microseconds	.96/.50	.40/.50	0.8/0.4	0.8/0.4	0.6/0.3
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 630K bytes	Opt.; 630K bytes	No	No	No
Maximum diskette storage	630K bytes	630K bytes	—	—	—
Cartridge disk drive	Std.; 10-20M bytes	Std.; 10-20M bytes	Std.; 40MB	Std.; 80MB	Std.; 128MB
Pack disk drive	No	Opt.; 96M bytes	Opt.; 160MB	Opt.; 160MB	Opt.; 320MB
Fixed-head disk/drum	Opt.; 12.5M bytes	Opt.; 12.5M bytes	No	No	No
Maximum disk storage	12.5M bytes	12.5M bytes	—	—	—
WORKSTATIONS					
Maximum number connectable	16	16	4	8	16
Recommended maximum number	7	16	4	8	16
Keyboard style	Type.; num. key.	Type.; num. key.	10 key typewriter	10 key typewriter	10 key typewriter
Workstation printer	Optional	Optional	Opt.; 4	Opt.; 8	Opt.; 16
INPUT/OUTPUT DEVICES					
Serial printer	No	No	Std.; 50 cps	Std.; 200 cps	Std.; 200 cps
Line printer	No	Optional	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 600 lpm (2)
Reel-to-reel tape drive	No	Opt.; 800, 1600 cps	Opt.; 50KBS	Opt.; 50KBS	Opt.; 120KBS
Cassette/cartridge tape drive	No	No	Opt.; 750 cps/72KBS	Opt.; 750 cps/72KBS	Opt.; 750 cps/72KBS
CRT	Standard	Standard	Std.; 1920 char.	Std.; 1920	Std.; 1920
Other	No	No	Yes	Yes	Yes
COMMUNICATIONS					
Maximum no. of lines	16	16	4	8	16
Synchronous	Optional	Optional	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps
Asynchronous	Standard	Standard	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	X.25	X.25	No	No	SNA/SDLC
RJE terminals emulated	2780/3780	2780/3780	No	No	2780/3780
IBM 3270 emulation	Yes	Yes	No	No	Yes
SOFTWARE SUPPORT					
COBOL	No	Yes	Yes	Yes	Yes
RPG	No	No	Yes	Yes	Yes
FORTRAN	Yes	Yes	No	No	Yes
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	Yes	No	No	Yes
Other programming languages	ALGOL, PASCAL	ALGOL, PASCAL	ABOL, PASCAL	ABOL, PASCAL	ABOL, PASCAL
Multiprogramming	No	Yes, 2 partitions	Yes, 8 partitions	Yes, 16 partitions	Yes, 24 partitions
Max. no. of jobs run concurrently	16	16	Opt.; 8	Opt.; 16	Opt.; 24
Language complemented in firmware	No	No	Partially	Partially	Partially
Op. sys. implemented in firmware	No	No	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Auto parts dist.	Auto parts dist.	Dist., mfg., med.	Dist., mfg., med.	Dist., mfg., med.
Database management system	No	No	No	No	No
File access methods supported	Rand., ISAM	Rand., ISAM	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	5 years	5 years	3, 5, 7 yr.	3, 5, 7 yr.	3, 5, 7 yr.
Maintenance plans available	On-site	On-site	On-call	On-call	On-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	26,900	54,680	19,900	28,900	39,700
Monthly rental of basic system, \$	NA	NA	400	700	950
Monthly maint. price of basic system, \$	175	350	185	260	290
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of: additional memory module, \$	NA	6,000 (128K)	Varies	Varies	Varies
additional workstations, \$	2,500	2,500	Varies	Varies	Varies
additional printer, \$	4,500 (180 cps)	4,500 (180 cps)	Varies	Varies	Varies
Discounts available	Quantity	Quantity	Quantity (5)	Quantity (5)	Quantity (5)
Date of first U.S. delivery	April 1979	October 1979	1975	1976	1976
Number installed to date	5	1	NA	NA	NA
COMMENTS			Single source responsibility for hardware, software, service; field upgradeable	Single source responsibility for hardware, software, service; field upgradeable	Single source responsibility for hardware, software, service; pre-processors avail.

## All About Small Business Computers

MANUFACTURER AND MODEL	Computer Designed Systems Adviser IV-4240	Computer Designed Systems Adviser IV-5320	Computer Hardware Inc. 2130	Computer Hardware Inc. 3230	Computer Hardware Inc. 4210
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	I/M-642 CDS	I/M-644 CDS	CHI 2130	CHI 3230	CHI 4210
Add time, microseconds	10 (5 digits)	10 (5 digits)	1.6 (1 word)	2.7	4.6
No. of I/O ports on basic sys. and max.	1-24	1-32	21; 128	21	12
INTERNAL STORAGE					
Type	Core, MOS	Core, MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	64K	16K bytes	16K bytes	8K bytes
Maximum capacity, bytes	256K	320K	128K/4M bytes	128KB	64KB
Increment size, bytes	32K	32K	16K bytes	16K bytes	8K bytes
Cycle/access time, microseconds	0.4/0.25	0.35/0.2	0.8/-	1.6/-	1.2/-
MASS STORAGE					
Floppy disk (diskette) drive	No	No	—	No	Std.; 1.0M bytes
Maximum diskette storage	—	—	—	—	—
Cartridge disk drive	Std.; 192MB	Std.; 256MB	Opt.; 10M bytes	Opt.; 2M bytes	—
Pack disk drive	Opt.; 640MB	Opt.; 2400MB	Std.; 1600 bytes	Opt.; 80M bytes	—
Fixed-head disk/drum	Optional	Opt.; variable	Opt.; 2M bytes	Opt.; 2M bytes	—
Maximum disk storage	—	—	NA	NA	2.250K bytes
WORKSTATIONS					
Maximum number connectable	24	32	32	32	4
Recommended maximum number	24	32	32	32	1
Keyboard style	10 key typewriter	10 key typewriter	Typewriter	Typewriter	Type.; num. key
Workstation printer	Opt.; 24	Opt.; 32	Optional	Optional	No
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 200 cps	Std.; 200 cps	Opt.; 60 cps	Optional	Opt.; 30, 180 cps
Line printer	Opt.; 600 lpm (2)	Opt.; 900 lpm (4)	Opt.; 600 lpm	Optional	No
Reel-to-reel tape drive	Opt.; 120KBS	Opt.; 120KBS	Opt.; 75 ips	Optional	No
Cassette/cartridge tape drive	Opt.; 72KBS	Opt.; 750 cps/72KBS	No/No	No/No	Standard/No
CRT	Std.; 1920	Std.; 1920 char.	Std.; 24x50 char.	Opt.; 24x80 char.	Opt.; 24x80 char.
Other	Optional	Optional	—	—	—
COMMUNICATIONS					
Maximum no. of lines	24	32	32 async.; 4 sync.	32 async.; 4 sync.	8 async.; 1 sync.
Synchronous	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; to 4800 bps	Opt.; to 4800 bps	Opt.; to 4800 bps
Asynchronous	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	SNA/SDLC	SNA/SDLC	NA	NA	NA
RJE terminals emulated	2780/3780	2780/3780	2780/3780, 3741	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	No	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	Yes	No
RPG	Yes	Yes	Yes	Yes	No
FORTRAN	Yes	Yes	Yes	Yes	Yes
BASIC	Yes	Yes	Yes	Yes	No
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	ABOL, PASCAL	ABOL, PASCAL	ALGOL, SNOBOL	ALGOL, SNOBOL	—
Multiprogramming	Yes, 32 partitions	Yes, 54 partitions	Yes, 32 partitions	Yes	Yes, 8 partitions
Max. no. of jobs run concurrently	Opt.; 48	—	32	32	4
Language complemented in firmware	Partially	Partially	No	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	Partially	No
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Dist., mfg., med.	Dist., mfg., med.	General accounting	General accounting	General accounting
Database management system	Yes	Yes	Yes	Yes	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., ISAM	Rand., seq., ISAM	Seq., random
Software separately priced	Yes	Yes	Some	Some	Yes
Technical help separately priced	Yes	Yes	Yes	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	3, 5, 7 yr.	3, 5, 7 yr.	2, 3, 5 year	2, 3, 5 year	1, 2, 3, 5 year
Maintenance plans available	On-call	On-site, on-call	On-call	On-call	On-call, factory ret.
PRICING & AVAILABILITY					
Purchase price of basic system, \$	48,900	59,900	Consult factory	Consult factory	Consult factory
Monthly rental of basic system, \$	1,200	1,500	Consult factory	Consult factory	Consult factory
Monthly maint. price of basic system, \$	380	535	Consult factory	Consult factory	Consult factory
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of: additional memory module, \$	Varies	Varies	1,500 (16K bytes)	1,500 (16K bytes)	960 (8K bytes)
additional workstations, \$	Varies	Varies	—	—	—
additional printer, \$	Varies	Varies	—	—	—
Discounts available	Quantity (5)	Quantity (5)	Consult factory	Consult factory	Consult factory
Date of first U.S. delivery	1977	1977	1974	1976	1977
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	Single source responsibility for hardware, software, service; pre-processors avail.	Single source responsibility for hardware, software, service; pre-processors avail., field upgrade-able	Hardware floating-point available	Hardware floating-point available	



## All About Small Business Computers

MANUFACTURER AND MODEL	Computer Hardware Inc. 4800	Computer Horizons CHC Distribution System	Computer Interactions Compro II	Control Data Cyber 18 Series	Data Communications Corp. DCS
WORD LENGTH, BITS	16	16	12	16 + 2	16
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	TMS 9900 — 2; 4	DEC PDP-11/34 2 (1 word) 3; 7	DEC PDP-8/A,E,orF 15 (5 digits) 3; 32	Cyber 18 0.95 (1 word) 5; 9	See comments 0.80 (1 word) 4; 24
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 64K bytes 256K bytes 16K bytes —	MOS, core 16K 248K 16K, 32K, 64K 0.49, 0.725, 0.98	Core, MOS 32K 64K 8K 1.2/0/6	MOS 32K 512K 32K or 64K .75/.30	Core 8K 32K 8K 0.80/0.40
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Std. 2 NA NA NA	No NA Std.; 88M bytes No —	Opt.; 256K bytes 16M bytes Std.; 256M bytes Opt.; 90M bytes No —	Std.; 560K bytes Opt.; 35.2M bytes Opt.; 440M bytes No	Opt.; 500K bytes 1.6M bytes Std.; 100M bytes Opt.; 92M bytes Opt.; 2M bytes —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	4 1 Typewriter, numeric Standard	— — — —	16 8 Type.; num. key. Std.; 3	— — Type.; num. key. Optional	64 64 All types Optional
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	No Std.; 1x84 lpm No Opt.; 2x10 ips/No Opt.; 1x1920 char.	Std.; 180 cps Opt.; 1200 lpm Std.; 75 ips No Std.; 24x80 char.	Opt.; 165, 300 cps Std.; 300 lpm Opt.; 20, 40 KBS Cart.; 40KBS (opt.) Std.; 24x80 char. Opt.	Opt.; 180 cps Opt.; 300-900 lpm Opt.; 80KBS No Opt.; 24x80 char. Opt.	Std.; 165 cps Opt.; 300-1200 lpm Opt.; 60KBS Opt. cassette Std.; 24x80 char. Opt.
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	4 Opt.; 9600 bps Std.; 2x19 Bisync None 2780, 3780 No	64 Opt.; to 9600 bps Opt.; to 9600 bps ADDCP, DDCMP — — —	32 Opt.; to 9600 bps Opt.; to 2400 bps None Std.; RS232 None No	— Opt.; 4800 bps Opt.; 9600 bps Bisync — 2780/3780, HASP	256 Opt.; to 9600 bps Opt.; to 9600 bps ALL TNA, SNA 2780/3780 Yes
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	Yes No Yes Yes Yes NA Yes 4 No Partially No Various No Seq., random Some Some	Yes No No Yes No None Yes, 32 partitions — No No Yes Various No Seq., index seq. No Yes	No No Yes Yes Yes None Yes, 4 partitions 4 No No Yes Various No Rand., seq., index No Yes	Yes Yes Yes No Macro assembler None Yes, 16 partitions 17 No No No — No Rand., seq., index Yes Yes	Yes Yes FORTRAN IV, V Yes Yes ALGOL Yes 2 No No Yes Various No Rand., seq., index Yes Yes
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	1, 2, 3, 5 year On-call, factory ret.	Contact vendor —	2-, 3-, 5-year On-site, on-call, factory return, third party 35,000 700 (5-yr. lease) 150 No	5-year On-call	Purchase only On-call, on-site
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available  Date of first U.S. delivery Number installed to date	8,850 3.25/mo. (24 mo.) Consult factory No 1,500 (32K bytes) NA Consult factory Consult factory	150,000-200,000 No — — — — — —	35,000 700 (5-yr. lease) 150 No Contact vendor — — Quantity	16,700-18,300 565-618 565-618 No 3,000 (32K bytes) — 10,300 (300 lpm) Quantity	50,000 Purchase only — No 8,000 (256K bytes) 1,190 12,500 (300 lpm) Quantity
COMMENTS	October 1979 —	NA NA	2nd quarter 1972 98	May 1976 NA	March 1977 NA
			System has paged memory; can also add word processing OS to convert to WORDPRO II system; introduced in 1977		

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MANUFACTURER AND MODEL	Data Communications Corp. DPS	Data Communications Corp. RTS	Data Communications Corp. TPS	Data General CS/10 MOD. C1	Data General CS/10 MOD. C3
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	See Comments	DG Micro/Nova 3/12	See Comments	DG MicroNova	DG MicroNova
Add time, microseconds	0.60 (1 word)	0.80 (1 word)	0.80 (1 word)	2.4	2.4
No. of I/O ports on basic sys. and max.	5; 59	4; 24	4; 24	1; 4	1; 4
INTERNAL STORAGE					
Type	Core	Core	Core	NMOS	NMOS
Capacity of basic system, bytes	32K; 64K	8K	96K	64K	128K
Maximum capacity, bytes	256K	32K	256K	64K	128K
Increment size, bytes	16K	8K	32K	—	—
Cycle/access time, microseconds	0.80/0.40	0.80/0.40	0.80/0.40	960 nano.	960 nano.
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 500K bytes	Opt.; 500K bytes	Opt.; 500K bytes	Std.; 1.2M bytes	Std.; 1.2M bytes
Maximum diskette storage	1.6M bytes	1.6M bytes	1.6M bytes	2.4M bytes	2.4M bytes
Cartridge disk drive	Std.; 10M bytes	Std.; 10M bytes	Std.; 10M bytes	No	No
Pack disk drive	Opt.; 92M bytes	Opt.; 92M bytes	Opt.; 92M bytes	No	No
Fixed-head disk/drum	Opt.; 2M bytes	Opt.; 2M bytes	Opt.; 2M bytes	Std.; 12.5M bytes	Std.; 12.5M bytes
Maximum disk storage	—	—	—	25M bytes	25M bytes
WORKSTATIONS					
Maximum number connectable	39	39	39	4	4
Recommended maximum number	39	39	39	4	4
Keyboard style	All types	All types	All types	Type.; num. key.	Type.; num. key.
Workstation printer	Optional	Optional	Optional	Opt.; 3	Opt.; 3
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 165 cps	Std.; 165 cps	Std.; 165 cps	Opt.; 60, 180 cps	Opt.; 60, 180 cps
Line printer	Opt.; 200-1200 lpm	Opt.; 200-1200 lpm	Opt.; 300-1200 lpm	Opt.; 240, 300 lpm	Opt.; 240, 300 lpm
Reel-to-reel tape drive	Opt.; 60KBS	Opt.; 60KBS	Opt.; 60KBS	No	No
Cassette/cartridge tape drive	Opt. cassette	Opt. cassette	Opt. cassette	No	No
CRT	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	Opt.	Opt.	Opt.	None	None
COMMUNICATIONS					
Maximum no. of lines	256	256	256	1	1
Synchronous	Opt.; to 50K bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt., to 9600 bps	Opt.; to 9600 bps
Asynchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	No	No
Protocols supported	ALL	ALL	ALL	Bisync	Bisync
Network architecture supported	TNA, SNA, X.25	TNA, SNA, X.25	TNA, SNA, X.25	No	No
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	Yes	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	Yes	Yes
RPG	RGP II	Yes	No	No	No
FORTRAN	FORTRAN IV, V	FORTRAN IV, V	FORTRAN IV, V	No	No
BASIC	Yes	Yes	Yes	No	No
Assembler	Yes	Yes	Yes	No	No
Other programming languages	ALGOL	ALGOL	ALGOL	No	No
Multiprogramming	Yes; 1F, 1B	Yes	No	No	No
Max. no. of jobs run concurrently	2	NA	2	1	1
Language complemented in firmware	Fully	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	Yes	Yes	Yes	No	No
Industry application areas	Mortgages	Broadcasting, dist.	Banking, gen. mktg.	Dist., mfg., retail	Dist., mfg., retail
Database management system	INFOS	No	No	No	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	Yes	Yes	Yes	No	No
Technical help separately priced	Yes	Yes	Yes	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	Purchase only	Purchase only	Purchase only	No	No
Maintenance plans available	On-call, on-site	On-call, on-site	On-call, on-site	On-site, on-call	On-site, on-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	On request	25,000	85,000	10,950	24,440
Monthly rental of basic system, \$	Purchase only	Purchase only	Purchase only	NA	NA
Monthly maint. price of basic system, \$	—	—	—	NA	NA
Monthly maint. bundled with rental, \$	No	No	No	NA	NA
Purchase price of:					
additional memory module, \$	8,000 (256K bytes)	8,000 (256K bytes)	8,000 (256K bytes)	—	—
additional workstations, \$	1,190	1,190	1,190	2,290	2,290
additional printer, \$	12,500 (300 lpm)	12,500 (300 lpm)	12,500 (300 lpm)	4,050 (180 cps)	4,050 (180 cps)
Discounts available	Quantity	Quantity	Quantity	Qty., dollar vol.	Qty., dollar vol.
Date of first U.S. delivery	September 1976	March 1977	NA	July 1980	July 1980
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	CPU's include DG Nova 3/D, DG Eclipse S130/S230/S330		CPU's include DG Nova 3/D, DG Eclipse S130/S230/S330	Interactive COBOL, uses Winchester disk drives	Interactive COBOL, uses Winchester disk drives

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MANUFACTURER AND MODEL	Data General CS/20	Data General CS/30 MOD.C1	Data General CS/30 MOD.C3	Data General CS/40 MOD.1	Data General CS/40 MOD.C3
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	DG Micro Nova	DG Micro Nova	DG Micro Nova	DG Nova	DG Nova
Add time, microseconds	2.4	2.4	2.4	0.70	0.70
No. of I/O ports on basic sys. and max.	1; 1	1; 1	1; 4	1; 1	1; 1
INTERNAL STORAGE					
Type	NMOS	NMOS	NMOS	MOS	MOS
Capacity of basic system, bytes	64K	64K	64K	64K	64K
Maximum capacity, bytes	64K	64K	112K	64K	64K
Increment size, bytes	—	—	16K	—	—
Cycle/access time, microseconds	0.96/2.88	960 nano.	960 nano.	0.70	0.70
MASS STORAGE					
Floppy disk (diskette) drive	Std.: 630K bytes	Opt.: 315K bytes	Opt.: 315KB	Opt.: 315K bytes	Opt.: 315K bytes
Maximum diskette storage	1.3M bytes	315K bytes	315K bytes	315K bytes	80M bytes
Cartridge disk drive	—	Std.: 10M bytes	Std.: 10M bytes	Std.: 10M bytes	Std.: 10M bytes
Pack disk drive	—	No	No	No	No
Fixed-head disk/drum	—	No	No	No	No
Maximum disk storage	—	20M bytes	20M bytes	80M bytes	80M bytes
WORKSTATIONS					
Maximum number connectable	1	1	4	1	4
Recommended maximum number	1	1	4	1	3
Keyboard style	—	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	—	Opt.; 1	Opt.; 3	Opt.; 1	Opt.; 3
INPUT/OUTPUT DEVICES					
Serial printer	—	Std.: 60, 180 cps	Std.: 60, 180 cps	Std.: 60, 180 cps	Std.: 60, 180 cps
Line printer	Opt.; 60, 180 cps	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 300 lpm
Reel-to-reel tape drive	Opt.; 240, 300 lpm	No	No	Opt.; 60KBS	Opt.; 60KBS
Cassette/cartridge tape drive	No	No	No	No	No
CRT	No	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	Std.; 24x80 char.	None	None	None	None
COMMUNICATIONS					
Maximum no. of lines	1	1	1	1	1
Synchronous	Opt.; to 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; to 9600 bps	Opt.; 9600 bps
Asynchronous	No	No	No	No	No
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	—	No	No	No	No
RJE terminals emulated	—	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	Yes	Yes
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	No
Assembler	No	No	No	No	No
Other programming languages	No	No	No	No	No
Multiprogramming	No	No	Yes	No	Yes
Max. no. of jobs run concurrently	—	1	4	1	4
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	No
Industry application areas	First-time users, ind.	Dist., mfg., retail	Dist., mfg., retail	—	Dist., mfg., retail
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	No	No	No	No	No
Technical help separately priced	No	No	No	No	No
LEASE/MAINTENANCE OPTIONS					
LEASE/MAINTENANCE OPTIONS	NA	NA	NA	NA	NA
Lease plans available	On-site, on-call,	On-site, on-call,	On-site, on-call,	On-site, on-call,	On-site, on-call,
Maintenance plans available	factory return	factory return	factory	factory	factory
PRICING & AVAILABILITY					
Purchase price of basic system, \$	10,945	21,840	22,090	32,915	34,105
Monthly rental of basic system, \$	—	NA	NA	NA	NA
Monthly maint. price of basic system, \$	—	149	168	265	265
Monthly maint. bundled with rental, \$	—	No	NA	NA	NA
Purchase price of:					
additional memory module, \$	—	550 (16K bytes)	550 (16K bytes)	3600 (64K bytes)	3,600 (64K bytes)
additional workstations, \$	—	2,290	2,290	4,050 (180 cps)	2,290
additional printer, \$	—	4,050 (180 cps)	4,050 (180 cps)	2,290	4,050 (180 cps)
Discounts available	—	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.
Date of first U.S. delivery	NA	September 1979	September 1979	September 1977	September 1977
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	Interactive COBOL; built-in screen handler	Interactive COBOL; built-in screen controller	Interactive COBOL; up to 4 terminals, multi-terminal con- trol	Interactive COBOL; built-in screen handlers	Interactive COBOL; up to 4 terminals multi-terminal con- trol & built-in screen handlers

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MANUFACTURER AND MODEL	Data General CS/40 MOD.4	Data General CS/40 MOD.C5	Data General CS/40 MOD.6	Data General CS/50 MOD. C3	Data General CS/50 MOD. C5
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	DG Nova	DG Nova	DG Nova	DG Nova 4	DG Nova 4
Add time, microseconds	0.70	0.70	0.70	0.70	0.70
No. of I/O ports on basic sys. and max.	1; 4	1; 9	1; 9	1; 3	1; 3
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	128K	128K	64K	128K
Maximum capacity, bytes	64K	192K	192K	64K	256K
Increment size, bytes	—	64K	64K	—	128K
Cycle/access time, microseconds	0.70	0.70	0.70	700 nano.	700 nano.
MASS STORAGE					
Floppy disk (diskette) drive	Opt.: 315K bytes	Opt.: 315K bytes	Opt.: 315K bytes	Opt.: 315K bytes	Opt.: 315K bytes
Maximum diskette storage	—	315K bytes	—	315K bytes	315K bytes
Cartridge disk drive	Std.: 50M bytes	Std.: 10-20M bytes	Std.: 50M bytes	Std.: 20M bytes	Std.: 20M bytes
Pack disk drive	Opt.: 86, 190M bytes	No	Opt.: 96, 190M bytes	No	No
Fixed-head disk/drum	No	No	No	No	Opt.: 12.5-25M bytes
Maximum disk storage	760M bytes	40M bytes	760M bytes	20M bytes	25M bytes
WORKSTATIONS					
Maximum number connectable	4	4	9	3	3
Recommended maximum number	3	3	9	3	3
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Opt.; 3	Opt.; 8	Opt.; 8	Opt.; 3	Opt.; 3
INPUT/OUTPUT DEVICES					
Serial printer	Std.: 180 cps	Std.: 180 cps	Std.: 180 cps	Std.: 60, 180 cps	Std.: 60, 180 cps
Line printer	Std.: 300 lpm	Std.: 300-600 lpm	Std.: 300 lpm	Std.: 300 lpm	Std.: 300 lpm
Reel-to-reel tape drive	No	Opt.: 60KBS	No	Opt.: to 1600 bpi	Opt.: to 1600 bpi
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.
Other	None	None	None	None	None
COMMUNICATIONS					
Maximum no. of lines	1	1	1	1	1
Synchronous	Opt.: to 9600 bps	Opt.: 9600 bps	Opt.: to 9600 bps	Opt.: 9600 bps	Opt.: 9600 bps
Asynchronous	No	No	No	No	No
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	No	No	No	No	No
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	Yes	Yes
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	No
Assembler	No	No	No	No	No
Other programming languages	No	No	No	No	No
Multiprogramming	Yes	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	4	9	9	3	3
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	No
Industry application areas	Dist., mfg., medical	Dist., mfg., retail	Dist., mfg., medical	Dist., mfg., retail	Dist., mfg., retail
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	No	No	No	No	No
Technical help separately priced	No	No	No	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	NA	NA	NA	NA	NA
Maintenance plans available	On-site, on-call, factory	On-site, on-call, factory	On-site, on-call, factory	On-site, on-call	On-site, on-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	56,340	35,090	63,640	27,555	31,755
Monthly rental of basic system, \$	NA	NA	NA	NA	NA
Monthly maint. price of basic system, \$	385	344	465	242	262
Monthly maint. bundled with rental, \$	NA	NA	NA	NA	NA
Purchase price of:					
additional memory module, \$	—	3,600 (64K bytes)	3,600 (64K bytes)	—	5,250 (128K bytes)
additional workstations, \$	4,050 (180 bytes)	2,290	4,050 (180 cps)	2,290	2,290
additional printer, \$	2,290	4,050 (180 cps)	2,290	4,050 (180 cps)	4,050 (180 cps)
Discounts available	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.
Date of first U.S. delivery	March 1977	September 1977	March 1977	February 1980	February 1980
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	Interactive COBOL; up to 4 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 9 terminals; multi-terminal control; concurrent operations	Interactive COBOL; up to 9 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 3 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 3 terminals; multi-terminal control & built-in screen handlers

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MANUFACTURER AND MODEL	Data General CS/50 MOD. C6	Data General CS/60 MOD.C3	Data General CS/60 MOD.C5	Data General CS/60 MOD.6	Data General CS/70 MOD. C5
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	DG Nova 4	DG Eclipse	DG Eclipse	DG Eclipse	DG Eclipse
Add time, microseconds	0.70;	0.60	0.60	0.60	0.60
No. of I/O ports on basic sys. and max.	1; 9	1; 9	1; 9	1; 17	1; 9
INTERNAL STORAGE					
Type	MOS	MOS/ERCC	MOS/ERCC	MOS/ERCC	MOS/ERCC
Capacity of basic system, bytes	128K	64K	128K	128K	128K
Maximum capacity, bytes	256K	64K	256K	512K	256K
Increment size, bytes	128K	—	128K	128K, 256K	128K
Cycle/access time, microseconds	700 nano.	0.5-0.7/1.2	0.5-0.7/1.2	0.5-0.7/1.2	400 nano.
MASS STORAGE					
Floppy disk (diskette) drive	Opt.: 315K bytes	Opt.: 315K bytes	Opt.: 315K bytes	Opt.: 315K bytes	Std.: 1.2M bytes
Maximum diskette storage	315K bytes	—	315K bytes	315K bytes	1.2M bytes
Cartridge disk drive	No	Std.: 20M bytes	Std.: 20M bytes	Opt.: 10-20M bytes	No
Pack disk drive	Std.: 50M bytes	No	No	Std.: 50M bytes	No
Fixed-head disk/drum	No	No	No	No	Std.: 25M bytes
Maximum disk storage	200M bytes	40M bytes	80M bytes	760M bytes	40M bytes
WORKSTATIONS					
Maximum number connectable	9	4	9	17	9
Recommended maximum number	9	3	9	16	9
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Opt.: 8	Opt.: 3	Opt.: 8	Opt.: 15	Opt.: 8
INPUT/OUTPUT DEVICES					
Serial printer	Std.: 60, 180 cps	Std.: 180 cps	Std.: 180 cps	Std.: 180 cps	Std.: 180 cps
Line printer	Std.: 300 lpm	Std.: 300 lpm	Std.: 300 lpm	Std.: 300 lpm	Std.: 300 lpm
Reel-to-reel tape drive	Opt.: to 1600 bpi	Opt.: 60K cps	Opt.: 60K cps	Std.: 60K cps	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.	Std.: 24x80 char.
Other	None	None	None	None	None
COMMUNICATIONS					
Maximum no. of lines	1	1	1	1	1
Synchronous	Opt.: 9600 bps	Opt.: to 9600 bps	Opt.: to 9600 bps	Opt.: to 9600 bps	Opt.: 9600 bps
Asynchronous	No	No	No	No	No
Protocols supported	Bisync	Bisync	Bisync	Bisync	Bisync
Network architecture supported	No	No	No	No	No
RJE terminals emulated	2780/3780	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	No	No	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	Yes	Yes
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	No
Assembler	No	No	No	No	No
Other programming languages	No	No	No	No	No
Multiprogramming	Yes	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	9	4	9	16	9
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	No
Industry application areas	Dist., mfg., retail	Dist., data proc.	Dist., data proc.	Dist., data proc.	Dist., mfg., retail
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	No	No	No	No	No
Technical help separately priced	No	No	No	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	NA	NA	NA	NA	NA
Maintenance plans available	On-site, on-call	On-site, on-call, factory	On-site, on-call, factory	On-site, on-call, factory	On-site, on-call
PRICING & AVAILABILITY					
Purchase price of basic system	52,105	40,890	50,290	70,490	53,050
Monthly rental of basic system	NA	NA	NA	NA	NA
Monthly maint. price of basic system	407	465	365	528	—
Monthly maint. bundled with rental	NA	NA	NA	NA	NA
Purchase price of: additional memory module	5,250 (128K bytes)	5,000 (128K bytes)	5,000 (128K bytes)	5,000 (128K bytes)	5,250 (128K bytes)
additional workstations	2,290	4,050 (180 cps)	12,300 (300 lpm)	12,300 (300 lpm)	2,290
additional printer	4,050 (180 cps)	2,290	2,290	12,300 (300 lpm)	12,300 (300 lpm)
Discounts available	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.	Qty., dollar vol.
Date of first U.S. delivery	February 1980	September 1978	September 1978	September 1978	July 1980
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	Interactive COBOL; up to 9 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 4 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 9 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 17 terminals; multi-terminal control & built-in screen handlers	Interactive COBOL; up to 9 terminals; multi-terminal control & built-in screen handlers

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MANUFACTURER AND MODEL	Data General CS/70 MOD. C5	Datapoint 1150	Datapoint 1170	Datapoint 1500	Datapoint 1800
WORD LENGTH, BITS	16	8-bit byte	8-bit byte	8-bit byte	8-bit byte
CPU	DG Eclipse	Datapoint 1150	Datapoint 1170	Datapoint 1500	Datapoint 1800
Model	0.60	1.4	1.4	—	3.8
Add time, microseconds	1; 17	2	4	2	4
No. of I/O ports on basic sys. and max.					
INTERNAL STORAGE	MOS/ERCC	MOS	MOS	MOS	MOS
Type	512K	24K user	48K (user)	32K	64K
Capacity of basic system, bytes	512K	24K user	48K (user)	64K	64K
Maximum capacity, bytes	—	None	None	32K	—
Increment size, bytes	400 nano.	0.8/0.3	0.8/0.3	NA	.750/0.2
Cycle/access time, microseconds					
MASS STORAGE					
Floppy disk (diskette) drive	Std.; 1.2M bytes	Std.; 1M byte	Std.; 1M byte	Std.; 500K-1M byte	Std.; 1M-4M bytes
Maximum diskette storage	1.2M bytes	4M bytes	1M byte	1M byte	4M bytes
Cartridge disk drive	No	No	No	No	No
Pack disk drive	Std.; 380M bytes	No	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	760M bytes	—	—	—	—
WORKSTATIONS					
Maximum number connectable	17	1	4	1	4
Recommended maximum number	17	1	2	1	2
Keyboard style	Type; num. key.	Type; num. key.	Type; num. key.	Typewriter	Typewriter
Workstation printer	Opt.; 16	Optional	Optional	Optional	Optional
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 180 cps	Opt.; 80, 120 cps	Opt.; 80, 120 cps	Opt.; 340 lpm	Optional
Line printer	Std.; 300-600 lpm	Opt.; 300, 600 lpm	Opt.; 300, 600 lpm	Optional	Opt.; 300-900 lpm
Reel-to-reel tape drive	No	Opt.; to 1600 bpi	Opt.; to 1600 bpi	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 24x80 char.	Std.; 12x80 char.	Std.; 12x80 char.	Std.; 24x80 char.	Std.; 24x80 char.
Other	None	Opt. card reader	Opt. card reader	—	—
COMMUNICATIONS					
Maximum no. of lines	1	1	5	1	5
Synchronous	Opt.; 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; 200 bps	Std.; 9600 bps
Asynchronous	No	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; 900 bps	Std.; 9600 bps
Protocols supported	Bisync	Bisync, async	Bisync	Bisync	Bisync
Network architecture supported	No	—	—	—	—
RJE terminals emulated	2780/3780	See Comments	See Comments	See 5500 Comments	See 5500 Comments
IBM 3270 emulation	No	Yes	Yes	Yes	Yes
SOFTWARE SUPPORT					
COBOL	Yes	No	No	No	Yes
RPG	No	Yes	Yes	No	Yes
FORTRAN	No	No	No	Yes	No
BASIC	No	Yes	Yes	Yes	Yes
Assembler	No	Yes	Yes	Yes	Yes
Other programming languages	No	Databus, Datashare	Databus, Datashare	Databus	Databus, Datashare
Multiprogramming	Yes	No	No	Yes	Yes
Max. no. of jobs run concurrently	17	2	4	2	4
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	Yes	Yes	No	No
Industry application areas	Dist., mfg., retail	Gov't., pub., acct'g.	Gov't., pub., acct'g.	General purpose	General purpose
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., ISAM	Seq., rand., ISAM	Seq., rand., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	No	Yes	Yes	No	No
Technical help separately priced	No	No	No	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	NA	1, 2, 3 yr. lease	1, 2, 3, yr. lease	1, 2, 3 yr. lease	1, 2, 3 yr. lease
Maintenance plans available	On-site, on-call	On-site, on-call	On-site, on-call	On-site, un-call	On-site, on-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	53,050	14,480	15,980	Contact vendor	Contact vendor
Monthly rental of basic system, \$	NA	334 (3-yr. lease)	371 (3-yr. lease)	—	—
Monthly maint. price of basic system, \$	—	Contact vendor	Contact vendor	No	No
Monthly maint. bundled with rental, \$	NA	—	—	—	—
Purchase price of:					
additional memory module, \$	8,400 (256K bytes)	—	—	—	—
additional workstations, \$	2,290	—	—	—	—
additional printer, \$	12,300 (300 lpm)	—	—	—	—
Discounts available	Qty., dollar vol.	OEM	OEM	OEM	OEM
Date of first U.S. delivery	July 1980	January 1977	July 1977	NA	1978
Number installed to date	NA	NA	NA	NA	—
COMMENTS	Interactive COBOL; up to 9 terminals; multi-terminal control & built-in screen handlers	Under Databus/Multilink system can run 2 programs without partitioning; extensive communication for RJE interface	Under Datashare, system can run 4 programs without partitioning; extensive communications for RJE interface	See 5500 Comments	See 5500 Comments



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MANUFACTURER AND MODEL	Datapoint 3800	Datapoint 5500	Datapoint 6000	Datapoint 6600	Digi-Log Systems Microterm II
<b>WORD LENGTH, BITS</b>	8-bit byte	8-bit byte	8-bit byte	8-bit byte	8
<b>CPU</b>					
Model	Datapoint 3800	Datapoint 5500	Datapoint 6000	Datapoint 6600	Dual Zentec Z80A
Add time, microseconds	3.8	1.4	6.0	1.15	1.0
No. of I/O ports on basic sys. and max.	4 maximum	16	24	24	2; 3
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	60K	48K	120K (user)	120K (user)	66K
Maximum capacity, bytes	120K	48K	256K	120K (user)	88K
Increment size, bytes	60K	None	—	—	16K
Cycle/access time, microseconds	1.75	0.8/0.3	0.6/0.2	0.6/0.2	—
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	No	Opt.; 1M byte	Optional	Opt.; 1M byte	Std.; 324K bytes
Maximum diskette storage	No	1M byte	—	—	See Comments
Cartridge disk drive	No	Opt.; 160M bytes	Optional	Opt.; 160M bytes	No
Pack disk drive	No	Opt.; 200M bytes	Optional	Opt.; 200M bytes	No
Fixed-head disk/drum	No	No	Optional	No	No
Maximum disk storage	—	—	—	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	4	16	24	24	1
Recommended maximum number	2	8	12-14	12-14	1
Keyboard style	Typewriter	Type.; num. key.	Typewriter	Type.; num. key.	Typewriter
Workstation printer	Optional	Optional	Optional	Optional	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	No	Opt.; 120 lpm	Opt.; 40 cps	Opt.; 80, 120 cps	RS-232C
Line printer	Opt.; 300-900 lpm	Opt.; 300, 600 lpm	Opt.; 600, 900 lpm	Opt.; 300, 600 lpm	No
Reel-to-reel tape drive	No	Opt.; 9.6-20KBS	Optional	Opt.; to 1600 bpi	No
Cassette/cartridge tape drive	No	Cass.; 352 cps	No	Cast.; 352	No
CRT	Std.; 24x80 char.	Std.; 12x80 char.	Std.; 12x80 char.	Std.; 12x80 char.	Std.; 1920 char.
Other	—	—	—	Optional	No
<b>COMMUNICATIONS</b>					
Maximum no. of lines	4	16	25	25	Std.; to 19,200 bps
Synchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Std.; to 9600 bps
Asynchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Bisync
Protocols supported	Bisync	Bisync	Async, bisync	Async, bisync	—
Network architecture supported	—	—	—	—	2780/3780
RJE terminals emulated	See 5500 Comments	See Comments	See 5500 Comments	See 5500 Comments	Yes
IBM 3270 emulation	Yes	Yes	Yes	Yes	—
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes	Yes	Yes	Yes	No
RPG	Yes	Yes	Yes	Yes	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	Standard
Assembler	Yes	Yes	Yes	Yes	Optional
Other programming languages	Databus	Databus, Scribe	Databus	Databus, Datashare	None
Multiprogramming	Yes	Yes, 2 partitions	Yes	Yes, 2 partitions	No
Max. no. of jobs run concurrently	4	16	24	24	—
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	Yes	Yes	Yes	Yes	No
Industry application areas	General purpose	Gov't., acct'g., banking	General purpose	Gov't., acct'g., banking	General purpose
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., ISAM	Rand., seq., index	Rand., seq., ISAM	Rand., seq., ISAM	Rand., seq., ISAM
Software separately priced	Yes	Yes	No	Yes	Yes
Technical help separately priced	No	No	No	No	No
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	1, 2, 3 yr. lease	1, 2, 3 yr. lease	1, 2, 3 yr. lease	1, 2, 3 yr. lease	Purchase only
Maintenance plans available	On-site, on-call	On-site, on-call	On-site, on-call	On-site, on-call	Third party
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	Contact vendor	Contact vendor	Contact vendor	Contact vendor	7,800
Monthly rental of basic system, \$	—	—	—	—	75
Monthly maint. price of basic system, \$	—	—	—	—	No
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of:					
additional memory module, \$	—	—	—	—	600 (16K)
additional workstations, \$	—	—	—	—	—
additional printer, \$	—	—	—	—	3,900
Discounts available	OEM	OEM	OEM	OEM	Quantity
Date of first U.S. delivery	1978	1975	1978	July 1977	May 1978
Number installed to date	NA	NA	NA	NA	600
<b>COMMENTS</b>	See 5500 Comments	Dataform, Datashare, and RPG II program languages are also supported; extensive communications to RJE interface	See 5500 Comments	See 5500 Comments	Up to two dual density single-sided floppy drives are std.; options up to three dual density dbl. sided drives

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MANUFACTURER AND MODEL	Digital Computer Controls Synergist Model 1500	Digital Computer Controls Synergist Model 1550	Digital Computer Controls Synergist Model 2500	Digital Computer Controls Synergist Model 3700	Digital Equipment Corp. Datasystem 150
WORD LENGTH, BITS	16	16	16	16	16
CPU					PDP-11
Model	DG Micro Nova	DG Micro Nova	DG Nova 3/16	DG Nova 3/D	11/03
Add time, microseconds	2.4	2.4	1000	1000	NA
No. of I/O ports on basic sys. and max.	1; 3	1; 3	1; 9	1; 17	2; 2
INTERNAL STORAGE					
Type	MOS	MOS	Std.; core/opt; MOS	Std.; core/opt.; MOS	MOS
Capacity of basic system, bytes	48K	64K	64K	128K	32K
Maximum capacity, bytes	64K	64K	64K	256K	60K
Increment size, bytes	8K, 16K	—	—	16K, 32K	28K
Cycle/access time, microseconds	0.96/0.16	0.96/0.16	1.0/1.0	1.0/1.0	.39/NA
MASS STORAGE					
Floppy disk (diskette) drive	No	No	No	No	Standard
Maximum diskette storage	NA	NA	NA	NA	512K
Cartridge disk drive	Opt.; 10M bytes	Opt.; 10M bytes	Std.; 10M bytes	Std.; 10M bytes	No
Pack disk drive	No	No	Opt.; 96-190M bytes	Opt.; 96-190M bytes	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	—	—	—	512K
WORKSTATIONS					
Maximum number connectable	—	—	—	—	1
Recommended maximum number	—	—	—	—	1
Keyboard style	—	—	—	—	Type.; num. key.
Workstation printer	—	—	—	—	No
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 300 cps	Std.; 30 cps	Std.; 275 cps	Opt.; 30, 60, 180 cps	Opt.; 180 cps
Line printer	Opt.; 125 lpm	Opt.; 125 lpm	Opt.; 300, 600 lpm	Opt.; 300, 600 lpm	No
Reel-to-reel tape drive	No	No	Opt.; 60, 72KCS	Opt.; 60, 72KCS	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Opt.; 1920 char.	Opt.; 1920 char.	Std.; 1920 char.	Std.; 1920 char.	24 x 80
Other	—	—	—	—	No
COMMUNICATIONS					
Maximum no. of lines	2	2	9	17	1
Synchronous	No	No	No	No	Yes
Asynchronous	Standard	Standard	Standard	Standard	Yes
Protocols supported	None	No	Async	Async	NA
Network architecture supported	—	—	—	—	NA
RJE terminals emulated	—	—	—	—	IBM 2780/3780
IBM 3270 emulation	—	—	—	—	No
SOFTWARE SUPPORT					
COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	No
Assembler	No	No	No	No	No
Other programming languages	None	None	None	None	DIBOL (COBOL)
Multiprogramming	No	No	No	No	Yes
Max. no. of jobs run concurrently	—	—	—	—	3 tasks
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	Yes	Yes	Yes	Yes	No
Industry application areas	None	Whsl. dist.	Mfg., whsl. dist.	Mfg., whsl. dist.	Business acct.
Database management system	Yes	No	No	No	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Sequential, ISAM
Software separately priced	Yes	Yes	Yes	Yes	No
Technical help separately priced	No	No	No	No	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	—	—	—	—	NA
Maintenance plans available	—	—	—	—	NA
PRICING & AVAILABILITY					
Purchase price of basic system, \$	—	—	Contact vendor	Contact vendor	10,000
Monthly rental of basic system, \$	—	—	—	—	—
Monthly maint. price of basic system, \$	—	—	—	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	—	—	—	—	700
additional workstations, \$	—	—	—	—	No
additional printer, \$	—	—	—	—	No
Discounts available	—	—	—	—	OEM and volume
Date of first U.S. delivery	February 1978	July 1980	November 1977	January 1978	March 1979
Number installed to date	NA	NA	NA	NA	NA
COMMENTS					

## All About Small Business Computers

MANUFACTURER AND MODEL	Digital Equipment Corp. Datasystem 323	Digital Equipment Corp. Datasystem 325	Digital Equipment Corp. Datasystem 333	Digital Equipment Corp. Datasystem 335	Digital Equipment Corp. Datasystem 355
WORD LENGTH, BITS	16	16	16	16	16
CPU Model	DEC LSI-11	DEC LSI-11	PDP-11 11/23	PDP-11 11/23	DEC PDP-11/34A
Add time, microseconds			NA	NA	
No. of I/O ports on basic sys. and max.			4; 4	4; 4	
INTERNAL STORAGE Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	56K	64K	128K	128K	128K
Maximum capacity, bytes	56K	64K	256K	256K	256K
Increment size, bytes	—	—	128K	128K	32K
Cycle/access time, microseconds	1.2/0.7	1.2/0.7	.28/.28	.28/.28	0.73/0.7
MASS STORAGE Floppy disk (diskette) drive	Std.; 1M bytes	Std.; 7.2M byte	Standard	No	Opt.; 512K bytes
Maximum diskette storage	—	—	1 megabyte	—	—
Cartridge disk drive	Opt.; 19.2M bytes	Opt.; 19.2M bytes	Opt. 10 megabyte	5 megabytes	Std.; 19.2M bytes
Pack disk drive	No	No	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	20M bytes	20M bytes	11 megabytes	10 megabytes	20M bytes
WORKSTATIONS Maximum number connectable	4	4	NA	NA	8
Recommended maximum number	3	3	3	3	8
Keyboard style	Type.; num. key	Type.; num. key	Type.; num. key.	Type.; num. key.	Type.; num. key
Workstation printer	Optional; 2	Optional; 1	No	No	Optional; 1
INPUT/OUTPUT DEVICES Serial printer	Opt.; 180 cps	Opt.; 180 cps	180 cps	180 cps	Opt.; 30, 180 cps
Line printer	Opt.; 240, 300 lpm	Opt.; 240, 300 lpm	No	No	Opt.; 240, 300 lpm
Reel-to-reel tape drive	Opt.; 10KBS	Opt.; 10KBS	No	No	Opt.; 10KBS
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 24 x 80 char	Std.; 24 x 80 char.	24 x 80	24 x 80	Std.; 24 x 80 char.
Other	Opt.; card reader	Opt.; card reader	No	No	Opt.; card reader
COMMUNICATIONS Maximum no. of lines	4	4	4	4	8
Synchronous	Opt.; to 4800 bps	Opt.; to 4800 bps	Yes	Yes	Opt.; to 9600 bps
Asynchronous	No	No	No	No	No
Protocols supported	Bisync	Bisync	NA	NA	Bisync
Network architecture supported	DEC	DEC	NA	NA	DEC
RJE terminals emulated	2780, many DEC sys.	2780, many DEC sys.	IBM 2780/3780	IBM 2780/3780	2780, many DEC sys.
IBM 3270 emulation	No	No	No	No	No
SOFTWARE SUPPORT COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	No
Assembler	No	No	No	No	No
Other programming languages	DIBOL (COBOL)	DIBOL (COBOL)	DIBOL	DIBOL	DIBOL (COBOL)
Multiprogramming	No	No	Yes	Yes	No
Max. no. of jobs run concurrently	3	3	16	16	16
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	No
Industry application areas	Business acct.	Business acct.	Business accounting	Business accounting	Business acct.
Database management system	No	No	No	No	No
File access methods supported	Seq., ISAM	Seq., ISAM	Sequential, ISAM	Sequential, ISAM	Seq., ISAM
Software separately priced	No	No	No	No	No
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS Lease plans available	Contact vendor	Contact Vendor	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	On-site	On-site	On-site	On-site	On-site
PRICING & AVAILABILITY Purchase price of basic system, \$	17,250	27,000	17,850	25,500	33,000
Monthly rental of basic system, \$	Purchase only	Purchase only	Purchase only	Purchase only	Purchase Only
Monthly maint. price of basic system, \$	152	198	—	—	213
Monthly maint. bundled with rental, \$	NA	NA	—	—	NA
Purchase price of: additional memory module, \$	—	—	NA	NA	2,200 (32K)
additional workstations, \$	1,900	1,900	NA	NA	1,900
additional printer, \$	3,770 (180 cps)	3,770 (180 cps)	No	No	11,800 (300 lpm)
Discounts available	OEM and volume	OEM and volume	Yes	Yes	OEM and volume
Date of first U.S. delivery	November 1978	September 1978	First quarter 1980	First quarter 1980	September 1978
Number installed to date	NA	NA	NA	NA	NA
COMMENTS					

### All About Small Business Computers

MANUFACTURER AND MODEL	Digital Equipment Corp. Datasystem 358	Digital Equipment Corp. Datasystem 540	Digital Equipment Corp. DECstation 78	Digital Equipment Corp. DECstation 88	Digital Scientific Corporation Meta 4/1130
WORD LENGTH, BITS	16	16	12	12	16 + 2
CPU Model	DEC PDP-11/34A	PDP-11/44	LSI 8/A	PDP-8/A	DSC 4030
Add time, microseconds	—	NA	—	—	2.9/word
No. of I/O ports on basic sys. and max.	—	NA	10/10	10/20	4 to 21
INTERNAL STORAGE Type	MOS	MOS	Core	Core	Core
Capacity of basic system, bytes	128K	256K (8K cache)	16K	32K	16K
Maximum capacity, bytes	256K	1 megabyte	16K	128K	128K
Increment size, bytes	32K	NA	—	—	16K
Cycle/access time, microseconds	0.73/0.7	NA	3.6/	1.5/	0.9/0.5
MASS STORAGE Floppy disk (diskette) drive	Opt.; 512K bytes	No	Standard	Standard	Opt.; 512KB
Maximum diskette storage	—	—	2 million bytes	2 million bytes	—
Cartridge disk drive	Std.; 112M bytes	20 megabytes	No	20.4 million bytes	Opt.; 1MB
Pack disk drive	No	Opt.	No	No	Opt.; 160MB
Fixed-head disk/drum	No	No	No	No	Opt.; 1-2MB
Maximum disk storage	224M bytes	134 megabytes	2 million bytes	20.4 million bytes	—
WORKSTATIONS Maximum number connectable	8	NA	1	multiple	—
Recommended maximum number	8	NA	1	multiple	—
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	—
Workstation printer	Optional; 1	No	—	—	—
INPUT/OUTPUT DEVICES Serial printer	Opt.; 30, 180 cps	Opt.; 30, 180 cps	Opt.; 180 cps	Opt.; 180 cps	No
Line printer	Opt.; 240-900 lpm	Opt.; 240-1200 lpm	No	Opt.; 300 lpm	Opt.; 300-600 lpm
Reel-to-reel tape drive	Opt.; 10KBS	Opt.; 10-72KBS	No	No	Opt.; 30, 60KBS
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 24 x 80 char.	Opt.; 24 x 80	Std.; 24 x 80	Std.; 24 x 80	Opt.; 24 x 80 EIA
Other	Opt.; card reader	NA	NA	NA	—
COMMUNICATIONS Maximum no. of lines	8	32 EIA	2	4	32
Synchronous	Opt.; to 9600 bps	Opt.; to 50K bps	No	No	Opt.; to 9600 bps
Asynchronous	No	Opt.; to 9600 bps	Yes	Yes	Opt.; 50-19.2K bps
Protocols supported	Bisync	NA	Async	Async	Async, bisync
Network architecture supported	DEC	NA	NA	NA	—
RJE terminals emulated	2780, many DEC sys.	IBM 2780/3780	2780	2780	—
IBM 3270 emulation	No	Yes	NA	NA	—
SOFTWARE SUPPORT COBOL	No	Yes	No	No	Yes
RPG	No	Yes	No	No	Yes
FORTRAN	No	Yes	Yes	Yes	Yes
BASIC	No	Yes	Yes	Yes	No
Assembler	No	Yes	NA	NA	Yes, and marco
Other programming languages	DIBOL (COBOL)	DIBOL	NA	NA	APL
Multiprogramming	No	Yes	Yes	Yes	Opt.; to 32 partitions
Max. no. of jobs run concurrently	16	NA	127 tasks	127 tasks	—
Language complemented in firmware	No	No	No	No	Partially
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	Yes
Industry application areas	Business acct.	Business acct. & data	General business	General Business	Mktg., eng., educ.
Database management system	No	DBMS-11	No	No	Yes, DRS
File access methods supported	Seq., index seq.	Direct, seq., index seq.	Seq., under seq., rand.	Seq., index seq., rand.	Rand., seq., index
Software separately priced	No	No	No	No	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	No
LEASE/MAINTENANCE OPTIONS Lease plans available	Contact vendor	NA	NA	NA	—
Maintenance plans available	On-site	NA	NA	NA	—
PRICING & AVAILABILITY Purchase price of basic system, \$	48,000	54,900	7,995	11,500	60,000
Monthly rental of basic system, \$	Purchase only	NA	NA	NA	1,500
Monthly maint. price of basic system, \$	365	NA	68	129	—
Monthly maint. bundled with rental, \$	NA	NA	NA	NA	—
Purchase price of: additional memory module, \$	2,200 (32K)	NA	—	2,400 (16K)	—
additional workstations, \$	1,900	NA	—	1,600 to 3,770	—
additional printer, \$	14,050 (240 lpm)	NA	3,300	3,300 to 11,235	—
Discounts available	OEM and volume	Yes	Yes	Yes	—
Date of first U.S. delivery	September 1978	June 1980	September 1978	March 1978	1970
Number installed to date	NA	NA	20,000+	20,000+	Over 200
COMMENTS					Can run most IBM 1130/1180 programs; firmware arithmetic unit is optional

## All About Small Business Computers

MANUFACTURER AND MODEL	Digital Scientific Corporation Meta 4/5020	Digital Systems Galaxy/3	Digital Systems Galaxy/5	Dimis, Inc. Total 100 (70)	Dimis, Inc. Total 100 (30)
<b>WORD LENGTH, BITS</b>	16 + 2	8 to 20	8 to 20	16	16
<b>CPU</b>					
Model	DSC 5020	Galaxy/3	Galaxy/5	Modcomp Classic	Modcomp Classic
Add time, microseconds	1.45 (word)	5 (5 digits)	5 (5 digits)	0.2	0.3
No. of I/O ports on basic sys. and max.	8 to 21	15	15	1 to 32	1 to 32
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	16K	96K	128K	512K	128K
Maximum capacity, bytes	128K	128K	1M byte	4M bytes	512K
Increment size, bytes	16K	32K	64K	512K	128K
Cycle/access time, microseconds	0.5/0.29	0.75/0.50	0.75/0.50	250/250	250/250
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Opt.; yes	No	No	Optional	Optional
Maximum diskette storage	2M bytes	—	—	—	—
Cartridge disk drive	Opt.; 1.24M bytes	Std.; 27M byte/drive	Opt.	Optional	Optional
Pack disk drive	—	Opt.	Std.; 80M byte/drive	Std.; 4 to 200M bytes	Std.; 4 to 200M bytes
Fixed-head disk/drum	Opt.; 1-2M bytes	No	No	Optional	Optional
Maximum disk storage	—	100M bytes	100M bytes	4 to 200M bytes	4 to 200M bytes
<b>WORKSTATIONS</b>					
Maximum number connectable	16	15	60	—	—
Recommended maximum number	16	15	60	50; 1st 512KB	27; 1st 128KB
Keyboard style	Typewriter/APL	Acctg.; num. pad	Acctg.; num. pad	Typewriter	Typewriter
Workstation printer	Opt.; /16	Optional	Optional	—	—
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.; 180 cps	Optional	Optional	Optional	Optional
Line printer	Opt.; 300, 600 lpm	300, 600, 900 lpm	300, 600, 900 lpm	Std.; 600 lpm	Std.; 600 lpm
Reel-to-reel tape drive	Opt.; 37.5, 75 ips	1600 bpi	1600 bpi	Std.; 800 bpi, 9 trk	Std.; 800 bpi, 9 trk
Cassette/cartridge tape drive	No/No	Opt./No	Opt./No	No/No	No/No
CRT	1920 char.	Std.; 80 x 24 char.	Std.; 80 x 24 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.
Other	—	—	—	—	—
<b>COMMUNICATIONS</b>					
Maximum no. of lines	32	120	480	32	32
Synchronous	Opt.; to 9600	Std.; to 15,000 bps	Std.; to 15,000 bps	Optional	Optional
Asynchronous	Opt.; 19.2K bps	Std.; to 9600 bps	Std.; to 9600 bps	Std.; to 9600 bps	Std.; to 9600 bps
Protocols supported	Async, bisync	Programmable	Programmable	Programmable	Programmable
Network architecture supported	Noplans	None	none	—	—
RJE terminals emulated	2780/3780/3740	None	None	No	No
IBM 3270 emulation	No plans	No	No	No	No
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes	Yes	Yes	No	No
RPG	Yes	Yes	Yes	No	No
FORTRAN	Yes	No	No	Yes	Yes
BASIC	No	Yes	Yes	No	No
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	APL	PL/LMP, FMP	PL/G, LMP, FMP	None	None
Multiprogramming	Yes	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	16	6	20	255	255
Language complemented in firmware	No	Partially	Partially	No	No
Op. sys. implemented in firmware	No	Partially	Partially	No	No
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Mktg. res., civil eng.	Most industries	Most industries	Distribution	Distribution
Database management system	Yes	Yes	Yes	Yes	Yes
File access methods supported	Rand., seq., ISAM	ISAM, random	ISAM, random	Seq., rand., ISAM	Seq., rand., ISAM
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	No	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	3-5	3 yr., 5 yr.	3 yr., 5 yr.	N/A	N/A
Maintenance plans available	On-site contract	On-site contract/third party	On-site contract/third party	N/A	N/A
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	21,250	49,500	89,900	153,000	98,000
Monthly rental of basic system, \$	494 to 1012	On request	On request	N/A	N/A
Monthly maint. price of basic system, \$	600	345	678	N/A	N/A
Monthly maint. bundled with rental, \$	No	Yes	Yes	—	—
Purchase price of:					
additional memory module, \$	1,840 (16K bytes)	3,400 (32K bytes)	6,200 (64K bytes)	36,000 (512KB)	10,500 (128KB)
additional workstations, \$	1,350	975	975	3,100*	3,100*
additional printer, \$	17,750 (600 lpm)	300 lpm; 8,900	300 lpm; 3,900	Optional	Optional
Discounts available	Quantity	On request	On request	N/A	N/A
Date of first U.S. delivery	1978	June 1979	August 1979	December 1978	June 1974
Number installed to date	NA	5	30	15	18*
<b>COMMENTS</b>					
	Can run most IBM 1130/1800 programs; digital/analog I/O; real-times, batch, time-share OS	Sys. includes CPU, 5 comm. ports, 27 meg. drive, 300 lpm printer	Sys. includes CPU, 15 comm. ports, two 80 meg. drives, one CRT, one 600 lpm printer	3 CRT's std., pkg. includes staff and mgmt. training and conversion support *First CRT in 2 branch location is \$5,000	3 CRT's std., pkg. includes staff and mgmt. training and conversion support. *Includes compatible Modcomp II

### All About Small Business Computers

MANUFACTURER AND MODEL	Display Data Corporation In*Sight	Distribution Management Systems BS11-70-03	Distribution Management Systems BS11-23-01	Distribution Management Systems BS11-780-03	Distribution Management Systems BS11-44-07
WORD LENGTH, BITS	8	16	16	32	16
CPU Model	Microdata 1600/30	DEC PDP-11/70	DEC PDP-11/23	DEC VAX 11/780	DEC PDP-11/44
Add time, microseconds	4.6	—	—	—	—
No. of I/O ports on basic sys. and max.	2; 20	—	—	—	—
INTERNAL STORAGE Type	Core; semiconductor	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	32K	512K	64K	512K	256K
Maximum capacity, bytes	128K	2M	128K	2M	1M
Increment size, bytes	8K, 16K, 32K, 48K	128K	64K	128K	128K
Cycle/access time, microseconds	1.0/0.35	—	—	—	—
MASS STORAGE Floppy disk (diskette) drive	No	Std.; 512K bytes	Opt.; 512K bytes	Standard	No
Maximum diskette storage	NA	402M bytes	10M bytes	—	—
Cartridge disk drive	Std.; 80M bytes	Optional	Standard	Optional	Std.; RK07
Pack disk drive	No	Std.; 67M bytes	Std.; 10M bytes	Std.; 67M bytes	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	80M bytes	—	—	—	—
WORKSTATIONS Maximum number connectable	32	64	4	64	64
Recommended maximum number	24	32	4	64	32
Keyboard style	Type.; num. key.	Typewriter	Typewriter	Typewriter	Typewriter
Workstation printer	Optional	Standard	Optional	Standard	Standard
INPUT/OUTPUT DEVICES Serial printer	Std.; 120 cps	Optional	Standard	Optional	Optional
Line printer	Opt.; 150-600 lpm	Standard	Optional	Standard	Standard
Reel-to-reel tape drive	Opt.; 10-20KBS	Standard	No	Standard	Standard
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 24 x 80 char.	Std.; VT-100	Optional	Std.; VT100	Std.; VT100
Other	No	No	No	No	No
COMMUNICATIONS Maximum no. of lines	32	64	8	64	64
Synchronous	No	No	No	No	No
Asynchronous	Std.; to 9600 bps	No	No	No	No
Protocols supported	ANSI Std., async.	—	—	—	—
Network architecture supported	None	None	None	None	None
RJE terminals emulated	None	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	Yes	Yes	Yes	Yes
SOFTWARE SUPPORT COBOL	No	Yes	No	Yes	Yes
RPG	No	No	No	No	No
FORTRAN	No	Yes	Yes	Yes	Yes
BASIC	No	Yes	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	DEAL, ORACLE	No	No	No	No
Multiprogramming	Yes; 10 partitions	Yes	No	Yes	Yes
Max. no. of jobs run concurrently	26	—	—	—	—
Language complemented in firmware	88	Yes	Yes	Yes	Yes
Op. sys. implemented in firmware	No	Yes	Yes	Yes	Yes
General accounting packages	Yes	No	No	No	No
Industry application areas	Distribution	Distribution	Distribution	Distribution	Distribution
Database management system	Yes	Yes	No	Yes	Yes
File access methods supported	Rand., seq., index seq.	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS Lease plans available	5-, 7-year	Purchase only	Purchase only	Purchase only	Purchase only
Maintenance plans available	On-site	On-site, on-call fact. ret., third party	On-site, on-call, factory ret., third party	On-site, on call, factory ret., third party	On-site, on-call, factory ret., third party
PRICING & AVAILABILITY Purchase price of basic system, \$	54,000	95,000	16,500	159,000	44,000
Monthly rental of basic system, \$	Purchase only	Purch./lease only	Purch./lease only	Purch./lease only	Purch./lease only
Monthly maint. price of basic system, \$	297	717	209	948	515
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of: additional memory module, \$	3,500 (8K)	20,000 (512K bytes)	15,000 (64K bytes)	18,500 (1M byte)	20,000 (512K bytes)
additional workstations, \$	3,700	1,900	1,900	1,900	1,900
additional printer, \$	8,000 300 lpm	11,800 (300 lpm)	11,800 (300 lpm)	18,000 (600 lpm)	11,800 (300 lpm)
Discounts available	Quantity	No	No	—	—
Date of first U.S. delivery	1970	April 1979	December 1979	January 1980	January 1980
Number installed to date	43	8	2	NA	NA
COMMENTS					

## All About Small Business Computers

MANUFACTURER AND MODEL	Durango F-85	Four-Phase IV/40	Four-Phase IV/50	Four-Phase IV/60	Four-Phase IV/65
WORD LENGTH, BITS	8-bit byte	24	24	24	24
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	Intel 8085 1.33 0/5	Four-Phase 16 (word) 34	Four-Phase 16 (word) 29	Four-Phase IV/60 12 (word) 40	Four-Phase IV/65 12 (word) 55
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 64K 64K — .50/.25	MOS 24K 96K 24K 2.0	MOS 24K 96K 24K 2.0	MOS 192K bytes 192K bytes — 0.8	MOS 192K bytes 192K bytes — 0.8
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Std.; 946K bytes 4 units; 1.89M bytes No Std.; 12-24M bytes No —	Opt.; 354K bytes 3 units; 22.5MB Std.; 2.5M bytes No 10M bytes —	Std.; 354K bytes 4 units; 270MB Std.; 2.5M bytes opt.; 270M bytes 10M bytes —	— 3-22.5M bytes 2.5M bytes — 2.5, 10, 20M bytes —	— 3-22.5M bytes 2.5m bytes — 2.5, 10, 20M bytes —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	5 5 Type.; num. key. Opt.; 1	16 Varies Type.; num. key —	24 Varies Type.; num. key —	16 16 Multiple std. Opt.; 16	24 24 Multiple std. Opt.; 16
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Std.; 165 cps No No No Std.; 1980 char. —	Opt.; 55 cps Opt.; 120-1000 lpm No No Std.; 24x80 char. Opt. card reader	Opt.; 55 cps Opt.; 120-1000 lpm No No Std.; 24 x 80 char. Opt. card reader	55 cps 120,100 lpm No No Std.; 960, 1920 char. Opt. card reader	55 cps 120, 1000 lpm No No Std.; 1920 char. Opt. card reader
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	5 Up to 9600 bps Up to 9600 bps Async, bisync — IBM 2780/3780 No	2 Std.; to 9600 bps Opt.; to 2400 bps Async, bisync IBM SNA 2780/3780, HASP Yes	8 Std.; to 9600 bps Opt.; to 9600 bps Async, bisync IBM SNA 2780/3780, HASP Yes	— Std. to 9600 bps Opt. to 2400 bps SDLC, async, bisync SNA 2780/3780, HASP Yes	— Std. to 9600 bps Opt. to 2400 bps SDLC, async, bisync SNA 2780/3780, HASP Yes
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No No No Yes No No Yes, 5 partitions 5 No Partially Yes Dist., insurance No Seq., rand., ISAM Yes Yes	Yes Yes No Yes None No 1 No No No Mfg., med., ins., bank No Rand., seq., index No —	Yes Yes No No Yes None No 1 No No No Mfg., med., ins., bank No Rand., seq., index No —	Yes No No No Yes VISION, DATA IV Yes, 5 partitions 5 No No No Mfg., ins., health No Rand., seq., ISAM No No	Yes No No No Yes VISION, DATA IV Yes, 5 partitions 5 No No No Mfg., ins., health No Rand., seq., ISAM No No
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	5 years On-site and factory return	With rental On-call	With rental On-call	1, 3 yrs.; 42 months On-call	1, 3 yrs.; 42 months On-call
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	12,983 300 (approx.) 107 No — 1,995 — — December 1978 Over 300	37,440 619 (42 mo. lease) Contact vendor Yes — — Quantity June 1973 10,000 (all systems)	74,785 1,140 (42 mo. lease) Contact vendor Yes — — Quantity Fourth qtr. 1976 10,000 (all systems)	64,615 726 (42/mo. lease) Contact vendor Yes — — Quantity May 1979 10,000 (all systems)	79,915 908 (42/mo. lease) Contact vendor Yes — — Quantity May 1979 10,000 (all systems)
COMMENTS					

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MANUFACTURER AND MODEL	Four-Phase IV/70	Four-Phase IV/90	General Information Systems GIS/150-text II	General Information Systems GIS/335	General Information Systems GIS/355
WORD LENGTH, BITS	24	24	16	16	16
CPU					
Model	Four-Phase	Four-Phase	DEC D150	DEC D335	DEC D355
Add time, microseconds	16 (word)	12 (word)	3.85 (32 bits)	2 (32 bits)	3 (32 bits)
No. of I/O ports on basic sys. and max.	78	64	3; 6	4; 8	1; 8
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	24K	96K	60K	128K	128K
Maximum capacity, bytes	96K	480K	60K	256K	256K
Increment size, bytes	24K	—	—	64K	128K
Cycle/access time, microseconds	2.0	0.8	.35/.21	.50/.25	.775/.375
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 354K bytes	Opt.; 354K bytes	Standard	Opt.; 1024K (2)	Opt.; 1024K (2)
Maximum diskette storage	4 units; 270MB	4 units; 270MB	1,024 M bytes	2,048M bytes	2,04M bytes
Cartridge disk drive	Std.; 10M bytes	Opt.; (4) 10M bytes	No	Std.; 20M bytes	Std.; 20M bytes
Pack disk drive	Opt.; 270M bytes	Opt.; (3) 270M bytes	No	No	No
Fixed-head disk/drum	No	Opt.; (2) 20M bytes	No	No	No
Maximum disk storage	—	—	—	80M bytes	80M bytes
WORKSTATIONS					
Maximum number connectable	32	32	2	8	8
Recommended maximum number	Varies	32	1	8	8
Keyboard style	Type.; num. key.	Multiple std.	Typewriter	Typewriter	Typewriter
Workstation printer	—	Opt.; 32	Standard	Std.; 2; Opt.; 8	Std.; 2; Opt.; 8
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 55 cps	Opt.; 55 cps	Std.; 240 cps	Std.; 180 cps	Std.; 180 cps
Line printer	Opt.; 120-1000 lpm	Opt.; 120-1000 lpm	Opt.; 300 lpm	Opt.; 300-600 lpm	Opt.; 300-600 lpm
Reel-to-reel tape drive	No	Opt.; 72.5-37.5 ips	No	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 6 x 48 char.	Std.; 960, 1920 char.	Std.; 1920 or 3168	Std.; 1920 or 3168	Std.; 1920 or 3168
Other	Opt. card reader	Opt. card reader	No	No	No
COMMUNICATIONS					
Maximum no. of lines	8	8	4	8	8
Synchronous	Std.; to 9600 bps	Std.; to 9600 bps	Std.; 9600 bps	No	No
Asynchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Std.; 9600 bps	Std.; 9600 bps	Std.; 9600 bps
Protocols supported	Async, bisync	Async, bisync	Async, bisync	Async	Async
Network architecture supported	IBM SNA	IBM SNA	DEC net	DEC net	DEC net
RJE terminals emulated	2780/3780, HASP	2780/3780, HASP	2780/3790	2780/3780	2780/3780
IBM 3270 emulation	Yes	Yes	Yes	Yes	Yes
SOFTWARE SUPPORT					
COBOL	Yes	Yes	No	No	No
RPG	Yes	Yes	No	No	No
FORTRAN	No	No	Yes	Yes	Yes
BASIC	No	No	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	None	None	APL, DIBOL, PASCAL	APL, DIBOL, PASCAL	APL, DIBOL, PASCAL
Multiprogramming	No	Yes; 5 partitions	Yes (2 partitions)	Yes (2 partition)	Yes (2 partitions)
Max. no. of jobs run concurrently	1	5	2	16	16
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	Yes	Yes	Yes
Industry application areas	Mfg., med., ins., bank	Mfg., med., ins., bank	Mfg., word proc.	Mfg., word proc.	Mfg., word proc.
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	No	No	No	No	No
Technical help separately priced	—	—	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	With rental	1, 3 yr.; 24 months	5-year	5-year	5-year
Maintenance plans available	On-call	On-call	On-site, on-call contract	On-site, on-call contract	On-call contract
PRICING & AVAILABILITY					
Purchase price of basic system, \$	62,050	51,200	16,000	30,500	34,000
Monthly rental of basic system, \$	1,344 (42 mo. lease)	931 (42 mo. lease)	392	748	833
Monthly maint. price of basic system, \$	Contact vendor	Contact vendor	65	265	268
Monthly maint. bundled with rental, \$	Yes	Yes	No	No	No
Purchase price of:					
additional memory module, \$	Contact vendor	Contact vendor	—	1,500 (64K bytes)	4,000 (128K bytes)
additional workstations, \$	—	—	2,170	2,170	2,170
additional printer, \$	—	—	2,600 (180 cps)	7,500 (300 lpm)	7,500 (300 lpm)
Discounts available	Quantity	Quantity	Quantity (5)	Quantity (5)	Quantity (5)
Date of first U.S. delivery	February 1971	June 1977	October 1979	March 1980	December 1978
Number installed to date	10,000 (all systems)	10,000 (all systems)	1	NA	5
COMMENTS			Basic system includes word processing, other software available	Basic system includes client write-up, payroll, AIP, AIR, GL mfg. sales rep., and word processing	Basic system includes client write-up, payroll, AIP, AIR, GL mfg., sales rep., and word processing



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MANUFACTURER AND MODEL	General Information Systems GIS/358	General Robotics Gemini	General Robotics Pegasus	General Robotics Polaris	General Robotics Tristar
WORD LENGTH, BITS	16	16	16	16	16
CPU					
Model	DEC D358	DEC LSI-11	DEC LSI-11	DEC LSI-11	DEC LSI-11
Add time, microseconds	3 (32 bits)	3.5	3.5	3.5	3.5
No. of I/O ports on basic sys. and max.	1; 8	1; 14	1; 14	1; 14	1; 14
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	128K	64K	64K	64K	64K
Maximum capacity, bytes	256K	64K	64K	64K	64K
Increment size, bytes	128K	—	—	—	—
Cycle/access time, microseconds	.775/.375	.45/.30	.45/.30	.45/.30	.45/.30
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 1024K (2)	Std.; 2.5M bytes (2)	Opt.; 3.8M bytes (3)	Std.; 1M bytes (3)	Std.; 3.8M bytes (3)
Maximum diskette storage	—	(2) 2.5M bytes	(3) 3.8M bytes	(3) 1M bytes	(3) 3.8M bytes
Cartridge disk drive	Std.; 224K bytes	Opt.; 20M bytes	Std.; 20M bytes	Opt.; 20M bytes	Opt.; 20M bytes
Pack disk drive	No	No	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	1,792K bytes	—	—	—	—
WORKSTATIONS					
Maximum number connectable	8	14	14	14	14
Recommended maximum number	8	8	14	3	8
Keyboard style	Typewriter	No	No	Teletype	No
Workstation printer	Std.; 2, Opt.; 8	No	No	Standard (1)	No
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 180 cps	No	No	Std.; 110 cps	No
Line printer	Opt.; 300-600 lpm	No	No	No	No
Reel-to-reel tape drive	No	No	No	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 1920 or 3168	No	No	Std.; 480 char.	No
Other	No	No	No	No	No
COMMUNICATIONS					
Maximum no. of lines	8	14	14	14	14
Synchronous	No	No	No	No	No
Asynchronous	Std.; 9600 bps	Std.; 19.2K bps	Std.; 19.2K bps	Opt.; 19.2K bps	Std.; 19.2K bps
Protocols supported	Async	Async	Async	Async	Async
Network architecture supported	DEC net	IBM, DECnet	IBM, DECnet	IBM, DECnet	IBM, DECnet
RJE terminals emulated	2780/3780	2780	2780	2780	2780
IBM 3270 emulation	Yes	No	No	No	No
SOFTWARE SUPPORT					
COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	Yes	Yes	Yes	Yes	Yes
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	APL, DIBOL, PASCAL	APL, DIBOL	APL, DIBOL	APL, DIBOL	APL, DIBOL
Multiprogramming	Yes (2 partitions)	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	16	14	14	14	14
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	Yes	No	No	No	No
Industry application areas	Mfg., word proc.	General purpose	General purpose	General purpose	General purpose
Database management system	No	No	No	No	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	No	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	5-year	Purchase only	Purchase only	Purchase only	Purchase only
Maintenance plans available	On-call contract	Factory return	Factory return	Factory return	Factory return
PRICING & AVAILABILITY					
Purchase price of basic system, \$	51,000	9,500	17,000	12,000	11,000
Monthly rental of basic system, \$	1,250	—	—	—	—
Monthly maint. price of basic system, \$	420	—	—	—	—
Monthly maint. bundled with rental, \$	No	No	No	No	No
Purchase price of:					
additional memory module, \$	4,000 (128K bytes)	—	—	—	—
additional workstations, \$	2,170	—	—	—	—
additional printer, \$	7,500 (300 lpm)	—	—	—	—
Discounts available	Quantity (5)	Qty., dollar vol., educ.	Qty., dollar vol., educ.	Qty., dollar vol., educ.	Qty., dollar vol., educ.
Date of first U.S. delivery	December 1978	April 1979	November 1977	April 1978	June 1978
Number installed to date	1	NA	NA	NA	NA
COMMENTS	Basic system includes ableclient write-up, payroll, AIP, AIR, GL, mfg., sales rep., and word processing				

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MANUFACTURER AND MODEL	Harris 100	Harris 500	Harris 800	Hewlett-Packard General Sys. Div. 250	Hewlett-Packard General Sys. Div. 300 Model A
<b>WORD LENGTH, BITS</b>	24, 48	24, 48	24, 48	16	16
<b>CPU</b> Model Add time, microseconds No. of I/O ports on basic sys. and max.	Harris 100 0.60 (3 bytes) 24 maximum	Harris 500 — 24 maximum	Harris 800 NA 31 maximum	HP9845 Process. Chip 1,000 (12 digits) See comments	HP300 420 (31 digits) 1 (8 devices)
<b>INTERNAL STORAGE</b> Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 192K bytes 768K bytes 48K bytes 0.45 (6B)/0.3 (6B)	MOS 192K bytes 3,072K bytes 192K bytes 0.40 (6B)/0.29 (6B)	MOS 384K bytes 3,072K bytes 192K bytes 0.40 (6B)/0.29 (6B)	MOS 128 (sys); 32K (user) 196 (sys); 64K (user) 32K 0.833	MOS 256K 1M 128K 0.5/0.43
<b>MASS STORAGE</b> Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	No — Opt.; 10.8M bytes Opt.; 40MB-4.8GB No —	No — Opt.; 10.9M bytes Opt.; 40MB-4.8GB No —	No — Opt.; 10.8M bytes Opt.; 40MB-4.8GB No —	Std.; 1.2-3.6M bytes 3 units; 3.5M bytes Opt.; 20M bytes No No 43M bytes	Std.; 1M byte 1 unit; 1M byte Opt.; 80M bytes Opt.; 480M bytes Std.; 12M bytes —
<b>WORKSTATIONS</b> Maximum number connectable Recommended maximum number Keyboard style Workstation printer	32 App. dependent Typewriter Optional	64 App. dependent Typewriter Optional	128 App. dependent Typewriter Optional	5 5 Type.; num. key. Opt.; 2	16 16 Type.; num. key. Opt.; 16
<b>INPUT/OUTPUT DEVICES</b> Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	180 cps 240-900 lpm Opt.; 469K No Opt.; 1920 char. Options	180 cps 240-900 lpm Opt.; 469K No Opt.; 1920 char. Options	180 cps 240-900 lpm Opt.; 469K No Opt.; 1920 char. Options	Opt.; 30, 180 cps Opt.; 400 lpm No No Std.; 24 x 80 char. No	Opt.; 180 cps Opt.; 400 lpm No No Std.; 24 x 80 char. No
<b>COMMUNICATIONS</b> Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	32 Opt.; 56K bps Opt.; 19.2K bps Async, bisync None See comments Yes	64 Opt.; 56K bps Opt.; 19.2K bps Async, bisync None See comments Yes	128 Opt.; 56K bps Opt.; 19.2K bps Async, bisync None See comments Yes	5 No Opt.; to 9600 bps None — — —	16 No Opt.; to 9600 bps None — — —
<b>SOFTWARE SUPPORT</b> COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	Yes Yes Yes Yes Yes APL, SNOBOL Yes, variable App. dependent No No No — Yes, TOTAL Rand., seq., index Some Yes	Yes Yes Yes Yes Yes APL, SNOBOL Yes, variable App. dependent No No No — Yes, TOTAL Rand., seq., index Some Yes	Yes Yes Yes Yes Yes APL, SNOBOL Yes, variable App. dependent No No No — Yes, TOTAL Rand., seq., index Some Yes	No No No Yes No No 6 See comments See comments Yes Manuf., dist. Yes Direct chain, cal., seq. Yes (application only) Yes	No Yes No Yes SL1300 — Yes No fundamental limit Partially Partially No Office automation Yes 7 methods Yes Yes
<b>LEASE/MAINTENANCE OPTIONS</b> Lease plans available Maintenance plans available	Third party lease On-call	Third party lease On-call	Third party lease On-call	1 to 5 yrs. On-site, on-call	1 to 5 yrs. On-site, on-call
<b>PRICING &amp; AVAILABILITY</b> Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	45,000 — 500 NA 2,400 (48K bytes) — — Qty., dollar vol. First qtr. 1977 NA	99,500 — 605 NA 28,800 (1.9M bytes) — — Qty., dollar vol. First qtr. 1979 NA	155,200 — 1,095 NA 28,800 (1.9M bytes) — — Qty., dollar vol. First qtr. 1980 NA	17,000 — 90 No 1,050 (32K) 4,250 9,800 (400 lpm) OEM and volume September 1978 NA	35,000 — 160 No 2,500 (128K) 1,450 + 3,640 (180 cps) OEM and volume December 1978 NA
<b>COMMENTS</b>	Hardware supported, virtual memory sys- tem; RJE: 2780, 3780, HASP, UT-200, U-1004	Hardware supported, virtual memory sys- tem; RJE: 2780, 3780, HASP, UT-200, U-1004	Hardware supported, virtual memory sys- tem; RJE: 2780, 3780, HASP, UT-200, U-1004	Software assigns por- tions of RAM as regis- ters. Std. I/O is one HPIB-type channel. Operating software is resident in RAM memory as if it were fully implemented in firmware.	Code & data segmen- tation; IMAGE data base management. See Report M11-472- 701 for more details.

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MANUFACTURER AND MODEL	Hewlett-Packard General Sys. Div. 300 Model B	Hewlett-Packard HP 3000 Series 30	Hewlett-Packard HP 3000 Series 33	Hewlett-Packard HP 3000 Series III	Honeywell Level 6 Model 23
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b> Model Add time, microseconds No. of I/O ports on basic sys. and max.	HP300 420 (31 digits) 1 (8 devices)	HP 3000 Series 30 — 10; 10	HP 3000 Series 33 — 10; 17	HP 3000 Series III — 13; 33	Honeywell CPS 93XX 3.5 (16 bits) 5; 9
<b>INTERNAL STORAGE</b> Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 256K 1024K 128K 0.5/0.43	MOS 256K 1024K 256K .86	MOS 256K 1024K 256K .86	MOS 256K 2048K 256K .7	MOS 32K 128K 32K —
<b>MASS STORAGE</b> Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Std.; 1M byte 1M bytes Std.; 20-80M bytes Opt.; 360M bytes No —	Std.; 1.18M bytes 1.18M bytes Std.; 8 x 20M bytes Opt.; 50-120M bytes No —	Std.; 1.18M bytes 1.18M bytes Std.; 8 x 20M bytes Opt.; 50-120M bytes No —	No None No Std.; 50M bytes No 960M bytes	4 x 256/512K bytes 2M bytes 4 x 26/80M bytes No No —
<b>WORKSTATIONS</b> Maximum number connectable Recommended maximum number Keyboard style Workstation printer	16 16 Type.; num. key. Opt.; 16	32 32 All types Opt.; 1 per term.	32 32 All types Opt.; 1 per term.	64 64 All types Opt.; 1 per term.	16 Varies Type.; num. key. Opt.; up to 16
<b>INPUT/OUTPUT DEVICES</b> Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Opt.; 180 cps Opt.; 400 lpm No No Std.; 24 x 80 char. No	Opt.; 180 cps Opt.; 400 lpm Opt.; 75KBS Opt.; cassette only Std.; 1920 char.	Opt.; 180 cps Opt.; 400 lpm Opt.; 75KBS Opt.; cassette only Std.; 1920 char.	Opt.; 180 cps Opt.; 400-1000 lpm Opt.; KBS Opt.; cassette only Std.; 1920 char.	Opt.; 30-160 cps Opt.; 240-900 lpm No No Opt.; 960, 1920, 2000 No
<b>COMMUNICATIONS</b> Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	16 No Opt.; to 9600 bps None — — —	2 Opt.; 56KBS Opt.; 9600 bps BISYNC HP-DSN 2780/3780 No	7 Opt.; 56KBS Std.; 9600 bps BISYNC HP-DSN 2780/3780 No	9 Opt.; 56KBS-2.5KBS Std.; 2400 bps BISYNC HP-DSN 2780/3780, HASP 2, No	— Opt.; 50-9600 bps Std.; 50-9600 bps Async, bisync — HASP, 2780/3780, Yes
<b>SOFTWARE SUPPORT</b> COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No Yes No Yes — — Yes No fundamental limit Partially Partially No Office automation Yes 7 methods Yes Yes	Yes Yes Yes Yes No SPL Yes, virtual No limit Partially Partially No Manufacturing Yes Seq., random, ISAM Some Yes	Yes Yes Yes Yes No SPL Yes, virtual No limit Partially Partially No Manufacturing Yes Seq., random, ISAM Some Yes	Yes Yes Yes Yes No SPL, APL Yes, virtual No limit Partially Partially No Manufacturing Yes Seq., random, ISAM Some Yes	Yes Yes Yes No Yes Macro preprocessor Yes; no limit No fixed limit No No No Mfg., various others Yes Rand., seq., index Yes Yes
<b>LEASE/MAINTENANCE OPTIONS</b> Lease plans available Maintenance plans available	1 to 5 yrs. —	Yes, many plans On-site, on-call	Yes, many plans On-site, on-call	Yes, many plans On-site, on-call	Purchase only On-site, on-call factory ret., third party
<b>PRICING &amp; AVAILABILITY</b> Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	45,000 — 225 No 2,500 (128K) 1,450 + 10,400 (400 lpm) OEM and volume December 1978 NA	49,750 None 360 — 5,000 (256K bytes) 1,500 3,640 (180 cps) Quantity, OEM October 1979 3,500 + (all models)	58,500 None 395 — 5,000 (256K bytes) 1,500 3,640 (180 cps) Quantity, OEM October 1978 3,500 + (all models)	105,000 None 534 — 3,750 (256K bytes) 1,500 10,550 (400 lpm) Quantity, OEM June 1978 3,500 + (all models)	4,800 — 52 — 2,525 (64K bytes) 1,980 (1920 char.) 3,200 (160 cps) Qty., vol., educ. 1978 NA
<b>COMMENTS</b>	Code & data segmen- tation; IMAGE data base management.				

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MANUFACTURER AND MODEL	Honeywell Level 6 Model 33	Honeywell Level 6 Model 43	Honeywell Level 6 Model 47	Honeywell Level 6 Model 53	Honeywell Level 6 Model 57
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b> Model Add time, microseconds No. of I/O ports on basic sys. and max.	Honeywell CPS 946X 1.9 (16 bits) 160 maximum	Honeywell CPS 955X 1.0 (16 bits) 160 maximum	Honeywell CPS 955X 0.7 (16 bits) 160 maximum	Honeywell CPS 955X 0.7 (16 bits) 160 maximum	Honeywell CPS 9572 0.7 (16 bits) 160 maximum
<b>INTERNAL STORAGE</b> Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	NMOS 32K 128K 16K, 64K 0.65, 0.55/0.44, 0.29	NMOS 32K 2048K 16, 64K 0.65, 0.55/0.44, 0.29	NMOS, core 32K 2048K 16K, 64K 0.65, 0.55/0.44, 0.29	NMOS, core 32K 2048K 16K, 64K 0.65, 0.55/0.44, 0.29	MOS 32K 2048K 16K, 64K 0.65, 0.55/0.44, 0.29
<b>MASS STORAGE</b> Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Opt.: 4 x 256/512K 2M bytes Opt.: 8 x 10/26/80M Opt.: 8 x 67/256M No —	Opt.: 4 x 256/512K 2M bytes Opt.: 8 x 10/26/80M Opt.: 8 x 67/256M No —	Opt.: 4 x 256/512K 2M bytes Opt.: 8 x 10/26/80M Opt.: 8 x 67/256M No —	Opt.: 4 x 256/512K 2M bytes Opt.: 8 x 10/26/80M Opt.: 8 x 67/256M No —	4 x 256/512K bytes 2M bytes 8 x 10/26/80M bytes 8 x 67/256K bytes No —
<b>WORKSTATIONS</b> Maximum number connectable Recommended maximum number Keyboard style Workstation printer	160 Varies Type.; num. key. Opt.; up to 160	160 Varies Type.; num. key. Opt.; up to 160	152 Varies Type.; num. key. Opt.; up to 152	152 Varies Type.; num. key. Opt.; up to 152	144 Varies Type.; num. key. Opt.; up to 144
<b>INPUT/OUTPUT DEVICES</b> Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Opt.: 30-160 cps Opt.: 240-900 lpm Opt.: 36-120KBS No Opt.: 960, 1920, 2000 Opt.	Opt.: 30-160 cps Opt.: 240-900 lpm Opt.: 36-120KBS No Opt.: 960, 1920, 2000 Opt.	Opt.: 30-160 cps Opt.: 240-900 lpm Opt.: 36-120KBS No Opt.: 960, 1920, 2000 Opt.	Opt.: 30-160 cps Opt.: 240-900 lpm Opt.: 36-120KBS No Opt.: 960, 1920, 2000 Opt.	Opt.: 30-160 cps Opt.: 240-900 lpm Opt.: 36-120KBS No Opt.: 960, 1920, 2000 Opt.
<b>COMMUNICATIONS</b> Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	160 Opt.: 50-72000 bps Opt.: 50-19200 bps Async, bisync, HDLC — HASP, 2780/3780 —	160 Opt.: 50-72000 bps Opt.: 50-19200bps Async, bisync, HDLC — HASP, 2780/3780 —	160 Opt.: 50-72000 bps Opt.: 50-19200 bps Async, bisync, HDLC — HASP, 2780/3780 —	160 Opt.: 50-72000 bps Opt.: 50-19200 bps Async, bisync, HDLC — HASP, 2780/3780 —	160 Opt.: 50-72000 bps Opt.: 50-19200 bps Async, bisync, HDLC — HASP, 2780/3780 Yes
<b>SOFTWARE SUPPORT</b> COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	Yes Yes Yes No Macro assembler None Yes No fixed limit No No No Mfg., etc. Yes Rand., seq., index Yes Yes	Yes Yes Yes No Yes Macro preprocessor Yes No fixed limit No No No Mfg., etc. Yes Rand., seq., index Yes Yes	Yes Yes Yes No Yes Macro preprocessor Yes No fixed limit No No No Mfg., etc. Yes Rand., seq., index Yes Yes	Yes Yes Yes No Yes Macro preprocessor Yes No fixed limit No No No Mfg., etc. Yes Rand., seq., index Yes Yes	Yes Yes Yes No Yes Macro preprocessor Yes; no limit No fixed limit No No No Mfg., etc. Yes Rand., seq., index Yes Yes
<b>LEASE/MAINTENANCE OPTIONS</b> Lease plans available Maintenance plans available	Purchase only On-site, on-call, factory ret., third party	Purchase only On-site, on-call, factory ret., third party	Purchase only On-site, on-call, factory ret., third party	Purchase only On-site, on-call factory ret., third party	Purchase only On-site, on-call factory ret., third party
<b>PRICING &amp; AVAILABILITY</b> Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	7,275 — 77 NA 875 (16K bytes) 1,980 (1920 char.) 3,200 (160 cps) Qty., vol., educ. 1976 NA	10,325 — 114 NA 2,240 (64K bytes) 1,980 (1920 char.) 3,200 (160 cps) Qty., vol., educ. 1977 NA	22,275 — 227 NA 2,250 (64K bytes) 1,980 (1920 char.) 3,200 (160 cps) Qty., vol., educ. 1978 NA	22,175 — 174 NA 2,250 (64K bytes) 1,980 (1920 char.) 3,200 (160 cps) Qty., vol., educ. 1978 NA	46,975 — 334 NA 875 (16K bytes) 1,980 (1920 char.) 23,000 (900 lpm) Qty., vol., educ., 1978 NA
<b>COMMENTS</b>	Field upgradable to all higher models; replaces models 34 and 36	Field upgradable to all higher models	Field upgradable to model 57; includes high speed commercial instructions	Field upgradable to model 57; includes 8K bytes high-speed cache memory	Includes 8K byte high-speed cache memory and high-speed commercial instructions

## All About Small Business Computers

MANUFACTURER AND MODEL	Honeywell Series 60 Level 62	IBM Series/1 4952	IBM Series/1 4953	IBM Series/1 4955	IBM System/3
<b>WORD LENGTH, BITS</b>	8-bit byte	8-bit byte/16-bit word	8-bit byte/16-bit word	8-bit byte/16-bit word	8-bit byte
<b>CPU</b>	Honeywell 62	IBM Model 4952	IBM Model 4953	IBM Model 4955	IBM System/3
Model	—	NA	NA	NA	24 (5 digits)
Add time, microseconds	6 std.; 3 opt.	5; 14	4; 13	3; 10	—
No. of I/O ports on basic sys. and max.	—	—	—	—	—
<b>INTERNAL STORAGE</b>	MOS	MOS	MOS	MOS	Core, MOS
Type	96K	32K	16K	16K	Varies
Capacity of basic system, bytes	992K	128K	32K	64K	512K
Maximum capacity, bytes	32K	32K	16K, 32K	16K, 32K	4, 8, 16, 32K
Increment size, bytes	1.0/0.5	—	—	—	1.52
Cycle/access time, microseconds	—	—	—	—	—
<b>MASS STORAGE</b>	Std.; 256K bytes	Opt.; to 27.8M bytes	Opt.; to 27.8M bytes	Opt.; to 27.8M bytes	Opt.; via 3741
Floppy disk (diskette) drive	(6); 1,800M bytes	27.8M bytes	27.8M bytes	27.8M bytes	—
Maximum diskette storage	Opt.; 46.4M bytes	See Comments	See Comments	See Comments	Opt.; 9.9M bytes
Cartridge disk drive	Opt.; 1,800M bytes	No	No	No	Opt.; 506M bytes
Pack disk drive	No	Opt.; to 128K bytes	Opt.; to 128K bytes	Opt.; to 128K bytes	No
Fixed-head disk/drum	—	—	—	—	—
Maximum disk storage	—	—	—	—	—
<b>WORKSTATIONS</b>	744 (24 lns x 31 dev.)	6 (can vary)	2 (can vary)	12 (can vary)	Variable
Maximum number connectable	100	6	2	12	—
Recommended maximum number	Typewriter	type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Keyboard style	Optional	No	No	No	—
Workstation printer	—	—	—	—	—
<b>INPUT/OUTPUT DEVICES</b>	Std.; 30 cps console	Opt.; 120 cps	Opt.; 120 cps	Opt.; 120 cps	Opt.; 85 cps
Serial printer	Opt.; 100-1600 lpm	Opt.; 80-414 lpm	Opt.; 80-414 lpm	Opt.; 80-414 lpm	Opt.; 100-1100 lpm
Line printer	Opt.; 10.4-60KBS	Opt.; to 120,000 bps	Opt.; to 12,000 bps	Opt.; to 12,000 bps	Opt.; 20-80KBS
Reel-to-reel tape drive	Cas.; opt., 700 cps	No	No	No	No
Cassette/cartridge tape drive	Opt.; 12 x 80 char.	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Opt.; 12/24 x 80 char.
CRT	Opt.	No	No	No	Opt.
Other	—	—	—	—	—
<b>COMMUNICATIONS</b>	25	8	8	8	8
Maximum no. of lines	Opt.; 19,200 bps	Opt.; to 56,000 bps	Opt.; to 56,000 bps	Opt.; to 56,000 bps	Opt.; to 50K bps
Synchronous	Opt.; 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	No
Asynchronous	Bisync	Bisync	Bisync	Bisync	SDLC
Protocols supported	IIV, ISO, BSC, VIP	System/370	System/370	System/370	—
Network architecture supported	360/370, 2780	IBM 3780, HASP	IBM 3780, HASP	IBM 3780, HASP	System/370
RJE terminals emulated	Yes	Yes	Yes	Yes	Yes
IBM 3270 emulation	—	—	—	—	—
<b>SOFTWARE SUPPORT</b>	Yes	Yes	Yes	Yes	Yes
COBOL	Yes	No	No	No	RPG II
RPG	Yes	Fortran IV	Fortran IV	Fortran IV	Yes
FORTRAN	No	No	No	No	Yes
BASIC	No	Macro assembler	Macro assembler	Macro assembler	No
Assembler	None	PL/1	PL/1	PL/1	None
Other programming languages	Yes	Yes	Yes	Yes	Yes; 3 partitions
Multiprogramming	15	6	2	12	—
Max. no. of jobs run concurrently	No	No	No	No	No
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	Yes	Yes	Yes	Yes	Yes
General accounting packages	Dist., mfg.	General purpose	General purpose	General Purpose	Dist., med., mfg., ed.
Industry application areas	Yes	No	No	No	No
Database management system	Seq., index, relative	Index	Index	Index	Rand., seq., index
File access methods supported	Yes	Yes	Yes	Yes	Yes
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	—	—	—	—	—
<b>LEASE/MAINTENANCE OPTIONS</b>	1-, 5-, 6-year	Purchase only	Purchase only	Purchase only	Contact vendor
Lease plans available	On-site, on-call, third party, factory ret.	On-site contract	On-site contract	On-site contract	On-call
Maintenance plans available	—	—	—	—	—
<b>PRICING &amp; AVAILABILITY</b>	33,192	4,600 (CPU only)	4,360 (CPU only)	6,165 (CPU only)	20,190
Purchase price of basic system, \$	799 (1-yr. lease)	Purchase only	Purchase only	Purchase only	816 (1-yr. lease)
Monthly rental of basic system, \$	160 (processor)	23	76	73	130
Monthly maint. price of basic system, \$	Yes	—	—	—	Yes
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:	3,315 (32K)	450 (32K bytes)	1,170 (16K bytes)	1,580 (16K bytes)	—
additional memory module, \$	—	1,320	1,395	1,735	4,525
additional workstations, \$	13,645 (450 lpm)	8,625 (80 lpm)	12,425 (235 lpm)	12,425 (235 lpm)	4,115 (86 cps)
additional printer, \$	Quantity	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Discounts available	—	—	—	—	—
<b>Date of first U.S. delivery</b>	August 1974	February 1979	November 1976	November 1976	December 1970
<b>Number installed to date</b>	Over 1,000	NA	NA	NA	Over 54,000
<b>COMMENTS</b>	Performance increase packages of 33, 78 of 90 percent opt.	Up to 256M bytes non-removable disk available	Up to 256M bytes non-removable disk available	Up to 256M bytes non-removable disk available	Six different models currently in line

## All About Small Business Computers

MANUFACTURER AND MODEL	IBM System/32	IBM System/34	IBM System/38	IBM 5100 Portable Computer	IBM 5110 Computing System
<b>WORD LENGTH, BITS</b>	8-bit byte	8-bit byte	8-bit byte	8-bit byte	8-bit byte
<b>CPU</b> Model Add time, microseconds No. of I/O ports on basic sys. and max.	IBM System 32 150 (5 digits) —	IBM System/34 68.5 (5 digits) —	IBM Model 300/500 — 8	IBM 5110 1000 (approx.) 2; variable	IBM 5110 NA 2; variable
<b>INTERNAL STORAGE</b> Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 16K 32K 8K 0.6/0.25	MOS 32K 128K 16K, 32K 0.6	MOS 512K 1536K No additions 1.1, 0.6	MOS 16K 64K 16K 0.53/0.33	MOS 16K 64K 16K 0.53/0.33
<b>MASS STORAGE</b> Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Std.: 303K bytes — See Comments No No 13.75M bytes	Std.: 1.2M bytes 1.2M bytes Std.: 8.6M bytes No No 128M bytes	Std.: 240.5K bytes 24M bytes No No Std.: 129M bytes 387M bytes	No NA No No No NA	Std.: 4.8M bytes 4.8M bytes No No No —
<b>WORKSTATIONS</b> Maximum number connectable Recommended maximum number Keyboard style Workstation printer	— — — Optional	16 local; 64 remote 16 Type.; num. key. Optional	40 — Type.; num. key Std.; 2	1 1 Type.; num. key No	Contact vendor — Type.; num. key No
<b>INPUT/OUTPUT DEVICES</b> Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Opt.; 40, 80 cps Std.; 50-155 lpm No No Std.; 6 x 40 char Opt.	Opt.; 40, 80, 120 cps Opt.; 160, 300 lpm No No Opt.; 960-1920 char. Opt.	Opt.; 40 to 120 cps Std.; 300 or 600 lpm Opt.; 12.5-50 ips No Std.; 24 x 80 char. (6) Opt.	Opt.; 80 cps No No Cart.; 2850 cps Std.; 16 x 64 char. Opt.	Opt.; 80, 120 cps No No Cart.; 2850 cps Std.; 16 x 64 char. Opt.
<b>COMMUNICATIONS</b> Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	1 Opt.; to 7200 bps No SDLC, Bisync System/3, /7, /360, System/370 No	16 Opt.; to 9600 bps No SDLC, Bisync — Yes	4 Opt.; to 9600 bps Opt.; to 1200 bps Bisync Most IBM system — —	1 No Opt.; to 3000 bps Bisync System/370 No	1 Opt.; to 9600 bps Opt.; to 300 bps Bisync System/370 No
<b>SOFTWARE SUPPORT</b> COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No RPG II No No Macro assembler None No No No No No Partially Yes Dist., med., mfg. No Rand., seq., index Yes Yes	Yes RPG II Yes No Yes None Yes; 8 partitions — Partially Partially Yes Mfg., med., dist. No Rand., seq., index Yes Yes	No Yes, RPG III No No No None No — Yes — Yes Yes	No No No Yes No APL No 1 Fully Fully No Finan. ana., stat. No Sequential Some Yes	No No No Yes No APL No — Fully Fully Yes Finan. ana., stat. No Sequential Some Yes
<b>LEASE/MAINTENANCE OPTIONS</b> Lease plans available Maintenance plans available	2-yr. base/1 yr. ext. Contact vendor	Contact vendor On-site, on-call	Purchase/rent only Contact vendor	3-month contract Contact vendor	3-month contract Contact vendor
<b>PRICING &amp; AVAILABILITY</b> Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available  Date of first U.S. delivery Number installed to date	26,870 1,047 185 Yes 878 (8K bytes) 1,000 29,000 (77/92 cps) Contact vendor  February 1975 NA	34,700 1,062 240 (approx.) Yes 1,175 (16K bytes) 3,040 12,800 (160 lpm) Education (10%)  January 1978 NA	121,480 3,352 — Yes NA 2,850 14,000 (650 lpm) Contact vendor  August 1979 NA	6,285 1,350 (3-mo. lease) 63.50 Yes 1,175 (16K bytes) — 3,675 (80 cps) Education (10%)  September 1975 NA	8,475 1,275 (3-mo. lease) 45 Yes 1,175 (16K) Contact vendor 3,200 (80 cps) Education (10%)  February 1978 NA
<b>COMMENTS</b>	System also includes 3.2M-13.75M bytes of nonremovable disk storage		There are 48 packaged models of the System/38	Portable computer weighing 50 lbs.; RS-232C interface available for non-IBM peripherals	Enhanced version of IBM 5100 with 2 to 3 times the internal computing power plus diskette I/O; 5110 with both diskette and tape costs \$14,475

## All About Small Business Computers

MANUFACTURER AND MODEL	IBM 5280 Distributed Data System	IBM 8100 Information System	ICL Ltd. 1503/43	ICL Ltd. 1503/44B	Infomark, Inc. S/1000
<b>WORD LENGTH, BITS</b>	8-bit byte	8-bit byte, 32-bit word	8	8	16
<b>CPU</b>	IBM 5285, 5286, 5288	IBM 8130/8140	ICL 1503/43	ICL 1503/44B	Data General 8605-E
Model	NA	—	150 (5 digits)	150 (5 digits)	.7
Add time, microseconds	1; 1	1; 19	Daisy chain 63	Daisy chain 63	2
No. of I/O ports on basic sys. and max.	—	—	—	—	—
<b>INTERNAL STORAGE</b>	MOS	MOSFET	MOS	MOS	MOS
Type	32K	256K	16K	16K	64K bytes
Capacity of basic system, bytes	160K	512K	32K	32K	64K bytes
Maximum capacity, bytes	32K	128K, 256K	8K	8K	—
Increment size, bytes	NA	1.5, 0.8	0.3/4.0	0.3/4.0	.7/.7
Cycle/access time, microseconds	—	—	—	—	—
<b>MASS STORAGE</b>	Std.; 12M bytes	Std.; 29M bytes	No	No	Opt. 1; 256K bytes
Floppy disk (diskette) drive	9.6M bytes	962M bytes	—	—	—
Maximum diskette storage	NA	No	Std.; 10M bytes	Std.; 10M bytes	Std.; 4-40M bytes
Cartridge disk drive	NA	No	No	No	—
Pack disk drive	NA	No	Std.; 10M bytes	Std.; 10M bytes	—
Fixed-head disk/drum	NA	No	—	—	—
Maximum disk storage	NA	320M bytes	—	—	—
<b>WORKSTATIONS</b>	4	24	—	—	—
Maximum number connectable	4	24	—	—	—
Recommended maximum number	Type.; num. key.	Type.; num. key.	Acct'g. & num. key.	Acct'g. & num. key.	—
Keyboard style	Opt. up to 5	Optional	—	—	—
Workstation printer	—	—	—	—	—
<b>INPUT/OUTPUT DEVICES</b>	Opt.; 40 to 120 cps	Opt.; 40 to 120 cps	Opt.; 165/330 cps	Opt.; 165/330 cps	Opt.; 1-180 cps
Serial printer	Opt.; 195 to 560 lpm	Opt.; 120 to 400 lpm	Opt.; 100-400 lpm	Opt.; 100-400 lpm	70-900 lpm
Line printer	No	Opt.; 160KBS	Optional	Optional	—
Reel-to-reel tape drive	No	No	Cart.; 2000 cps	Cart.; 2000 cps	—
Cassette/cartridge tape drive	Std.; 6x80 char.	Opt.; 240 to 2560	Std.; 24 x 80 lines	Std.; 24 x 80 char.	Std.; 1920 char.
CRT	Opt.; 24x80 char.	Opt.	Opt.	Opt.	—
Other	—	—	—	—	—
<b>COMMUNICATIONS</b>	1	24	2	2	4
Maximum no. of lines	Opt.; to 4800 bps	Std.; 600 to 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	—
Synchronous	No	—	Opt.; 1800 bps	Opt.; 1800 bps	Standard
Asynchronous	SDLC, Bisync	Bisync	Async, bisync	Async, bisync	Async
Protocols supported	System/370	SNA	—	—	—
Network architecture supported	Yes	Most IBM systems	—	—	—
RJE terminals emulated	No	Yes	—	—	—
IBM 3270 emulation	—	—	—	—	—
<b>SOFTWARE SUPPORT</b>	Yes	Yes	Yes	Yes	No
COBOL	Yes	No	No	No	Yes
RPG	No	Yes	No	No	No
FORTRAN	No	No	Yes	Yes	No
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	No	No	BTL, CDE, ADE	BTL, CDE, ADE	Forms; (FPG)
Other programming languages	Yes	—	No	No	No
Multiprogramming	8	31	—	—	—
Max. no. of jobs run concurrently	No	No	No	No	No
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	Yes	Yes	Yes
General accounting packages	Dist., retail	Comm., Yes (DTMS)	Dist., POS, gov't.	Dist., POS, gov't.	Wholesale dist. mfg.
Industry application areas	No	—	Yes	Yes	Yes
Database management system	Sequential	—	Seq., index seq.	Seq., index seq.	Seq.; I.S.
File access methods supported	Yes	Yes	Some	Some	Yes
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	—	—	—	—	—
<b>LEASE/MAINTENANCE OPTIONS</b>	24-month contract	2 years	—	—	—
Lease plans available	Contact vendor	On-call	—	—	—
Maintenance plans available	—	—	—	—	—
<b>PRICING &amp; AVAILABILITY</b>	5,280 (32K)	91,815 (348K)	18,000	22,000	49,000 (bundled)
Purchase price of basic system, \$	183 (3-months)	2,981	360	440	—
Monthly rental of basic system, \$	42	—	—	—	—
Monthly maint. price of basic system, \$	Yes	Yes	—	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:	600 (32K)	2,250 (128K)	—	—	—
additional memory module, \$	2,035	2,835	—	—	—
additional workstations, \$	5,800 (80 cps)	13,250 (400-500 lpm)	—	—	—
additional printer, \$	Education (10%)	Contact vendor	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	June 1980	August 1979	1975	1978	1976
Number installed to date	NA	NA	100	NA	NA
<b>COMMENTS</b>	—	—	—	—	*Integrated applic. *Interactive query language

### All About Small Business Computers

MANUFACTURER AND MODEL	Infomark, Inc. S/2000	Infomark, Inc. S/4000	Infomark, Inc. S/6000	Infomark, Inc. S/8000	Infotecs, Inc. IMP
WORD LENGTH, BITS	16	16	16	16	12
CPU					
Model	Data General 8608-E	DG 8608-E	DG 8608-E	DG 8608-E	IMP-1
Add time, microseconds	.7	.7	.7	.7	39 (7 digits)
No. of I/O ports on basic sys. and max.	2	2	2	2	4; 5
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K bytes	64K bytes	128K bytes	256K bytes	32K
Maximum capacity, bytes	256K bytes	256K bytes	256K bytes	256K bytes	32K
Increment size, bytes	64K bytes	64K bytes	128K bytes	—	—
Cycle/access time, microseconds	.7/.7	.7/.7	.7/.7	.7/.7	0.5/0.2
MASS STORAGE					
Floppy disk (diskette) drive	Opt. 1; 256K bytes	Opt. 1; 256K bytes	Opt. 1; 256K bytes	Opt. 1; 256K bytes	Std.; 3.8M bytes
Maximum diskette storage	—	—	—	—	—
Cartridge disk drive	Std.; 2-64M bytes	—	—	—	No
Pack disk drive	—	Std.; 4-160M bytes	Std.; 4-320M bytes	Std.; 4-320M bytes	No
Fixed-head disk/drum	—	Std.; 2-2M bytes	Std.; 2-40M bytes	Std.; 2-4M bytes	No
Maximum disk storage	—	—	—	—	—
WORKSTATIONS					
Maximum number connectable	—	—	—	—	—
Recommended maximum number	—	—	—	—	—
Keyboard style	—	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	—	—	—	—	—
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 4-180 cps	Opt.; 4-180 cps	Opt.; 4-180 cps	Opt.; 4-180 cps	Std.; 200 cps
Line printer	70-900 lpm	70-900 lpm	70-900 lpm	70-900 lpm	No
Reel-to-reel tape drive	Opt.; 1-10K bytes	Opt.; 1-10K bytes	Opt.; 1-10K bytes	Opt.; 1-10K bytes	No
Cassette/cartridge tape drive	—	—	—	—	No
CRT	Std.; 1920 char.	Std. 1; Opt. 7	Std. 1; Opt. 5	Std. 1; Opt. 23	Std.; 24 x 28 char.
Other	—	—	—	—	No
COMMUNICATIONS					
Maximum no. of lines	8	8	16	24	1
Synchronous	—	No	No	No	No
Asynchronous	Standard	Standard	Standard	Standard	Opt.; to 2400 bps
Protocols supported	Async	Async	Async	Async	None
Network architecture supported	—	—	—	—	—
RJE terminals emulated	—	—	—	—	—
IBM 3270 emulation	—	—	—	—	—
SOFTWARE SUPPORT					
COBOL	No	No	No	No	No
RPG	Yes	Yes	Yes	Yes	No
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	No
Assembler	Yes	Yes	Yes	Yes	No
Other programming languages	Forms; (FPG)	Forms (FPG)	Forms (FPG)	Forms (FPG)	HIBOL
Multiprogramming	No	No	No	No	No
Max. no. of jobs run concurrently	—	—	—	—	—
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Wholesale dist. mfg.	Dist., manuf.	Distribution	Dist., manuf.	Accounting
Database management system	Yes	Yes	Yes	Yes	No
File access methods supported	Seq.; I.S.	Seq.; I.S.	Seq.; I.S.	Seq.; I.S.	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	—	Contact vendor	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	—	—	—	—	—
PRICING & AVAILABILITY					
Purchase price of basic system, \$	64,000 (bundled)	110,000 (bundled)	130,000 (bundled)	143,000 (bundled)	7,995
Monthly rental of basic system, \$	—	—	—	—	Contact vendor
Monthly maint. price of basic system, \$	—	—	—	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:	—	—	—	—	—
additional memory module, \$	—	—	—	—	—
additional workstations, \$	—	—	—	—	—
additional printer, \$	—	—	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	1976	1976	1976	1976	September 1977
Number installed to date	NA	NA	NA	14	Over 600
COMMENTS	*Integrated applic. *Interactive query language	*Integrated applic. *Interactive query language	*Integrated applic. *Interactive query language	*Integrated applic. *Interactive query language	Programs compatible with DEC PDP/8: complete systems, and software are sold and serviced by infotecs dealers



## All About Small Business Computers

MANUFACTURER AND MODEL	Jacquard Systems J100	Jacquard Systems J500	Logical Machine Corp. ADAM	Logical Machine Corp. TINA	Melcom Business System Mitsubishi Computer 8018
WORD LENGTH, BITS	16	16	16	16	8
CPU					
Model	NS IMP-16	Bit-slice	LOMAC-prop.	LOMAC-prop.	Mitsubishi Electric Corp. A1105
Add time, microseconds	8.0	3.96	NA	NA	900 (12 digit)
No. of I/O ports on basic sys. and max.	2; 62	3	5	7	4, 12 (max.)
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	96K	128K	32K	48K	48K
Maximum capacity, bytes	128K	128K	64K	48K	96K
Increment size, bytes	32K	—	32K	NA	32K
Cycle/access time, microseconds	1.5/1.4	.5/.66	0.17/0.50	0.17/0.50	—
MASS STORAGE					
Floppy disk (diskette) drive	Standard	Standard	Opt.; 250K bytes	Std.; 5M bytes	0.5/0.32
Maximum diskette storage	2 x 256K bytes	2 x 512K bytes	—	—	2M bytes (4 units)
Cartridge disk drive	Opt.; 4 x 12M bytes	Opt.; 4 x 12M bytes	Std.; 10.6M bytes	No	Std.; 10-40M bytes
Pack disk drive	Opt.; 4 x 80M bytes	No	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	—	—	—	—
WORKSTATIONS					
Maximum number connectable	16	—	—	—	5
Recommended maximum number	Depends on function	—	—	—	3
Keyboard style	Typewriter	Typewriter	Type.; num. key.	Type.; num. key.	Typewriter, numeric
Workstation printer	Opt.; 8 max.	Opt.; 8 max.	—	—	Opt.; 4
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 45 cps	45 cps	Std.; 165 cps	Std.; 110 cps	Opt.; 120
Line printer	Opt.; 300 lpm	Opt.; 150 cps/300	Opt.; 200 lpm	No	Opt.; 110
Reel-to-reel tape drive	Opt.; 10-40KBS	No	No	No	No
Cassette/cartridge tape drive	No	No	No	No	Opt.; 6K/No
CRT	Std.; 1920 char.	Std.; 1920 char.	No	Std.; 24 x 80 char.	Std.; 1024
Other	—	—	—	—	—
COMMUNICATIONS					
Maximum no. of lines	19	2	No	1	1
Synchronous	Opt.; to 4800 bps	Std.; to 9600 bps	No	No	Opt.; 1200 to 9600
Asynchronous	Opt.; to 4800 bps	Std.; to 9600 bps	No	No	Opt.; 200 to 9600
Protocols supported	See comments	Async, bisync	None	None	BC-1, BSC
Network architecture supported	No	No	—	—	NA
RJE terminals emulated	2780/3780	2780/3780	—	—	NA
IBM 3270 emulation	Yes	Yes	—	—	No
SOFTWARE SUPPORT					
COBOL	No	No	No	No	Yes
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	No	No	Yes
Assembler	Yes	Yes	No	No	Yes
Other programming languages	Data Rite	Data Rite	Natural English	Natural English	—
Multiprogramming	Yes	Yes	No	No	Yes
Max. no. of jobs run concurrently	programmable	Programmable	—	—	6
Language complemented in firmware	No	No	Partially	Partially	Fully
Op. sys. implemented in firmware	No	No	NA	NA	Fully
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Dist., med., law	Dist., medical, law	All	All	Dist., pub., tracking
Database management system	No	No	No	No	No
File access methods supported	Seq., keyed	Seq., keyed	NA	NA	Seq.; direct ISAM
Software separately priced	Yes	Yes	No	No	Application Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	Various	Various	Contact vendor	Contact vendor	Third party
Maintenance plans available	On-call (AMSD)	On-call (AMSD)	—	—	On-site contract
PRICING & AVAILABILITY					
Purchase price of basic system, \$	19,900	9,200	34,995	14,995	18,900
Monthly rental of basic system, \$	Contact vendor	Contact vendor	800 (lease)	350 (lease)	—
Monthly maint. price of basic system, \$	172	92	—	—	128
Monthly maint. bundled with rental, \$	Yes	Yes	—	—	—
Purchase price of:					
additional memory module, \$	2,400 (32K)	—	—	—	800 (8K bytes)
additional workstations, \$	2,900	—	—	—	3000
additional printer, \$	3,180 (45 cps)	—	—	—	8000 (110 lpm)
Discounts available	Qty., dollar vol., educ.	Qty., dollar vol., educ.	—	—	NA
Date of first U.S. delivery	August 1975	NA	April 1975	September 1978	February 1979
Number installed to date	NA	NA	NA	NA	NA
COMMENTS	Optional 150 cps printer available		Unique natural language programming; no compiler or assemblers; see Report M11-587-101 for details	Unique natural language programming; no compilers or assemblers; see Report M11-587-101 for details	Optional 2000 character CRT available

## All About Small Business Computers

MANUFACTURER AND MODEL	Melcom Business System Mitsubishi Computer 8038	Microdata Series 2000	Microdata Series 4000	Microdata Series 6000	Microdata Series 8000
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b> Model Add time, microseconds No. of I/O ports on basic sys. and max.	Mitsubishi Electric Corp. B1200-2 37.75 (5 digit) 4, 64 (max)	Reality 2000 1 (core), 0.8 (MOS) —	Reality 4000 1 (core), 0.8 (MOS) —	Reality 6000 1 (core), 0.8 (MOS) —	Reality 8000 1 (core), 0.8 (MOS) —
<b>INTERNAL STORAGE</b> Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 128K 512K 128K —	Core and MOS 16K 64K 16K 1	Core and MOS 16K 64K 16K 1	Core and MOS 32K 128K 16K 1	Core and MOS 128K 512K 128K 1
<b>MASS STORAGE</b> Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	0.6/0.26 2M bytes (2 units) Std.; 10-160M bytes Opt.; 50-400M bytes No	No NA Std.; 10M bytes No No —	No NA Std.; 20-30M bytes No Opt.; 10M bytes —	No NA Std.; 50-257.4MB No Opt.; 10M bytes 514M bytes	No NA Std.; 128-257MB No Opt.; 10M bytes 514M bytes
<b>WORKSTATIONS</b> Maximum number connectable Recommended maximum number Keyboard style Workstation printer	27 16 Typewriter, numeric Opt.; 26	1 1 Type.; num. key Optional	1 1 Type.; num. key Optional	2 std.; 32 max. — Type.; num. key Optional	2 std.; 32 max. — Type.; num. key Optional
<b>INPUT/OUTPUT DEVICES</b> Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Opt.; 200 Opt.; 110/600 Opt.; 20K/40K Opt.; 6K/No Std.; 2000	Std.; 165 cps Opt.; 150-600 lpm Std.; 800 bpi No Std.; 24 x 80 char. —	Std.; 165 cps Opt.; 150-600 lpm Std.; 800 bpi No Std.; 24 x 80 char. —	Opt.; 165 cps Std.; 150-300 lpm Std.; 800/1600 bpi No Std.; 24 x 80 char. —	Opt.; 165 cps Std.; 300-600 lpm Std.; 800/1600 bpi No Std.; 24 x 80 char. —
<b>COMMUNICATIONS</b> Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	32 Opt.; 1200 to 19200 Opt.; 300 to 9600 BC-1, BSC NA NA No	1 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 2780, HASP No	1 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 2780, HASP No	32 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 2780, HASP No	32 Opt.; to 9600 bps Opt.; to 9600 bps Bisync IBM 360/370 2780, HASP No
<b>SOFTWARE SUPPORT</b> COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	Yes Yes Yes Yes No PROGRESS II Yes 16 No Partially Yes Distribution Yes Seq., Dir., Rel. Application Yes Yes	No Yes No Yes Yes English, PROC Yes 1 Partially Partially Yes Whsl., mfg., dist. Yes Rand., seq., index Yes Yes	No Yes No Yes Yes English, PROC Yes 1 Partially Partially Yes Whsl., mfg., dist. Yes Rand., seq., index Yes Yes	No Yes No Yes Yes English, PROC Yes 32 Partially Partially Yes Whsl., mfg., dist. Yes Rand., seq., index Yes Yes	No Yes No Yes Yes English, PROC Yes 32 Partially Partially Yes Whsl., mfg., dist. Yes Rand., seq., index Yes Yes
<b>LEASE/MAINTENANCE OPTIONS</b> Lease plans available Maintenance plans available	Third party On-site contract	Contact vendor On-call	Contact vendor On-call	Contact vendor On-call	Contact vendor On-call
<b>PRICING &amp; AVAILABILITY</b> Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available  Date of first U.S. delivery Number installed to date	43,000 — 287 — 5,000 (128K bytes) 2,800 17,000 (600 lpm) NA  November 1979 NA	32,500 — 290 NA 3,500 (16K bytes) 2,500 5,200 (165 cps)  December 1977 Over 2,000 (all sys.)	38,550 — 280 NA 3,500 (16K bytes) 2,500 5,200 (165 cps)  November 1973 Over 2,000 (all sys.)	61,250 — 420 NA 3,500 (16K bytes) 2,500 11,200 (300 lpm)  November 1973 Over 2,000 (all sys.)	84,975 — 580 NA 6900 2,500 15,900 (600 lpm)  October 1979 Over 2,000 (all sys.)
<b>COMMENTS</b>				Multi-user, interactive system; marketed through a nationwide dealer network	Multi-user, interactive system; marketed through a nationwide dealer network

## All About Small Business Computers

MANUFACTURER AND MODEL	Mini-Computer Systems MICOS 75	Mini-Computer Systems MICOS 100	Mini-Computer Systems MICOS 200	Mini-Computer Systems MICOS 300	Mylee Digital Sciences System 3000
WORD LENGTH, BITS	16	16	16	16	16
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	DG Nova 3/4 0.70 62 maximum	DG Nova 3/4 0.70 62 maximum	DG Nova 3/12 1.0 62 maximum	Dual DG Nova 3/12 1.0 62 maximum	Mylee System 3000 125 (5 digits) 11; 19
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	MOS 64K 64K — 0.70/0.35	MOS 64K 64K — 0.70/0.35	MOS 64K 256K 64K 1.0/0.5	MOS 192K 320K 64K 1.0/0.5	MOS 88K 286K 96K 0.8/0.4
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	No — Std.; 10M bytes No No 10M bytes	No — Std.; 10M bytes No No 32M bytes	No — Std.; 10M bytes Opt.; 80M bytes No 144M bytes	No — No Std.; 80M bytes No 300M bytes	Optional 4 drives; 64M bytes Std.; 16M bytes Optional No —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	2 2 Type; num. key. No	8 4 Type; num. key. No	32 12 Type; num. key. No	32 24 Type; num. key. No	16 16 Type; num. key. 1 std.; 7 opt.
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Std.; 60-180 cps Opt.; 300 lpm No No Std.; 24 x 80 char. No	Std.; 60 cps Opt.; 300 lpm No No Std.; 24 x 80 char. Opt. serial printer	Std.; 60 cps Opt.; 300-600 lpm No No Std.; 24 x 80 char. Opt. serial printer	Opt.; 60-180 cps Opt.; 300-600 lpm Opt.; 36-120KBS No Std.; 24 x 80 char. —	Std.; 165 cpm Opt.; 300 lpm No No Std.; 332-1920 char. No
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	1 Opt.; 9600 bps Std.; to 19.2K bps IBM 2780 No IBM 2780 No	0 No Std.; to 19.2K bps MTAM/Async — No	1 Opt.; 9600 bps Std.; to 19.2K bps Bisync No IBM 2780 No	0 Opt.; 9600 bps Std.; to 19.2k bps Bisync No IBM 2780 No	16 Opt.; to 9600 bps Opt.; to 1200 bps Bisync — IBM 2780/3780 No
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No No No Extensive No MINQ Yes (2 users) 2 No No Yes Acctg., CPA, whsl., "Fact matcher" Rand., seq., index Yes (application) Yes	No No No Extensive No MINQ Yes (8 users) 4 No No Yes Various "Fact matcher" Rand., seq., index Yes (application) Yes	No No No Extensive No MINQ Yes (12 users) 12 No Opt.; partially Yes Various "Fact matcher" Rand., seq., index Yes (application) Yes	No No No Extensive No MINQ Yes (24 users) 24 No Std.; partially Yes Various "Fact matcher" Rand., seq., index Yes (applications) Yes	No No No No No ACE Yes; 12 partitions — Partially Partially Yes Distribution Yes Index sequential Some No
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	Contact vendor On-site contract, third party	Contact vendor On-site contract, third party	Contact vendor On-site contract, third party	Contact vendor On-site contract, third party	Purchase only On-call
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	26,600 — 350 No — 2,400 2,200 (60 cps) Dollar vol., OEM	33,100 — 350 No — 2,400 3,200 (120 cps) Dollar vol., OEM	39,800 — 360 No 5,400 (64K bytes) 2,400 5,200 (180 cps) Dollar vol., OEM	136,000 — 1,090 No 5,400 (64K bytes) 1,400 9,400 (300 lpm) Dollar vol., OEM	28,995 Purchase only 9% No 2,000 (32K bytes) 2,950 Various models —
COMMENTS		Formerly "MICOS II"	Formerly "MICOS"	Price includes six CRTS, 160 mega bytes, and a 300 lpm printer	Total turnkey system from design to installation

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MANUFACTURER AND MODEL	NCR 8130	NCR 8150	NCR 8230	NCR 8250	Nixdorf 8870
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b>					
Model	CCM II	CCM II	NCR 6080	NCR 6080	DEC D-116 H
Add time, microseconds	2.0 (5 digits)	2.0 (5 digits)	2.4 (8 digits)	2.4 (8 digits)	1.0 (1 word)
No. of I/O ports on basic sys. and max.	32	32	8	8	17
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	Core
Capacity of basic system, bytes	48K	48K	64K	48K	64K
Maximum capacity, bytes	64K	256K	96K	128K	128K
Increment size, bytes	16K	16K, 32K	16K	16K	32K
Cycle/access time, microseconds	0.600/0.620	0.800/0.620	0.8/NA	0.8/NA	0.96/0.96
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Std.; 300K bytes	—	Opt.; 250K bytes	Opt. 250K bytes	No
Maximum diskette storage	—	—	1M bytes	1M byte	NA
Cartridge disk drive	No	No	Std.; 1-4M bytes	Std.; 1-8M bytes	Std.; 40M bytes
Pack disk drive	No	40M bytes	No	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	—	—	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	—	—	—	—	14 (remote)
Recommended maximum number	—	—	—	—	—
Keyboard style	—	—	—	—	Type.; num. key
Workstation printer	—	—	—	—	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Std.; 130 cps	Std.; 130 cps	Opt.; 50 lpm	Opt.; 50 lpm	Std.; 165 cps
Line printer	Opt.; 200 lpm	Opt.; 200 lpm	Opt.; 125-600 lpm	Opt. 125-600 lpm	Opt.; 300 lpm
Reel-to-reel tape drive	No	No	Opt.; 10/20KBS	Opt.; 10/20KBS	No
Cassette/cartridge tape drive	Opt.; 750 cps/No	Cart.; 600 cps	Std.; 750 cps/No	Std.; 750 cps/No	No
CRT	Std.; 24 x 80 char.	Std.; 16 x 32 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 27 x 74 char.
Other	—	—	Opt. card reader	Opt. card reader	—
<b>COMMUNICATIONS</b>					
Maximum no. of lines	1	1	5	24	8
Synchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	No
Asynchronous	NA	Std.; 2400 bps	Std.; 2400 bps	Std.; 2400 bps	Std.; to 1200 bps
Protocols supported	Bisync, SDLC	Bisync, async	Bisync, async	Bisync, async	Async
Network architecture supported	—	—	—	—	—
RJE terminals emulated	—	—	—	—	—
IBM 3270 emulation	—	—	—	—	—
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes	Yes	Yes	Yes	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	No	No	No	Yes
Assembler	No	Yes	Yes	Yes	No
Other programming languages	No	No	No	No	None
Multiprogramming	Yes	Yes	Yes	Yes	Yes
Max. no. of jobs run concurrently	—	—	—	—	—
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	Yes; APL, GL, pay.
General accounting packages	Yes	Yes	Yes	Yes	Dist., med., gov't.
Industry application areas	Whsl. dist., med., educ	Whsl. dist., med.,	Whsl. dist., med.,	Whsl. dist., med.,	No
Database management system	No	No	No	No	Yes
File access methods supported	Seq., ISAM	Seq., ISAM	Seq., ISAM	Seq., ISAM	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	—	—	—	—	60, 72-month
Maintenance plans available	—	—	—	—	Contact vendor
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	10,700	18,300	32,420	34,420	29,500
Monthly rental of basic system, \$	510	759	859	889	—
Monthly maint. price of basic system, \$	—	—	163	163	250
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of: additional memory module, \$	—	—	1,000 (16K bytes)	1,000 (16K bytes)	1,950 (32K bytes)
additional workstations, \$	—	—	—	—	2,950
additional printer, \$	—	—	—	—	7,750 (165 cps)
Discounts available	—	—	—	—	—
Date of first U.S. delivery	March 1978	March 1978	August 1977	March 1977	1975
Number installed to date	NA	NA	NA	NA	NA
<b>COMMENTS</b>		Optional 7500 cps cassette			Turnkey system that includes NIDAS distribution accounting system, mortgage closing, and client accounting

## All About Small Business Computers

MANUFACTURER AND MODEL	Northern Telecom Systems Corp. 405	Northern Telecom Systems Corp. 410	Northern Telecom Systems Corp. 440	Northern Telecom Systems Corp. 445	Northrop Data Systems BDS 500 Series
WORD LENGTH, BITS	8	8	8	8	Variable, 8-32
CPU Model	NTSC-405	NTSC-410	NTSC-440	NTSC-445	Microdata 1600
Add time, microseconds	5.5	5.5	5.5	5.5	9.68 (7 digits)
No. of I/O ports on basic sys. and max.	8	10	17	28	1 or 2
INTERNAL STORAGE Type	MOS	MOS	MOS	MOS	Core
Capacity of basic system, bytes	48K	40K	24K	64K	64K
Maximum capacity, bytes	64K	64K	64K	256K	128K
Increment size, bytes	16K	8K	8K	32K	32K
Cycle/access time, microseconds	0.25/0.25	0.50/0.25	0.50/0.25	0.25/0.25	0.96/0.96
MASS STORAGE Floppy disk (diskette) drive	Std.; 5M bytes	Optional 256K bytes	Optional 256K bytes	Opt.; 256K bytes	No
Maximum diskette storage	4 drives; 1M byte	No	No	2 drives; .5M bytes	NA
Cartridge disk drive	No	No	No	No	Std.; 5MB
Pack disk drive	No	No	No	Opt.; 4-74 5M bytes	No
Fixed-head disk/drum	No	Std.; to 5M bytes	Std.; to 20M bytes	Opt.; 5, 10, 20M bytes	No
Maximum disk storage	—	5M bytes	20M bytes	—	10MB
WORKSTATIONS Maximum number connectable	2	1	8	8	2
Recommended maximum number	2	1	4	8	2
Keyboard style	Type; num. key	Type; num. key.	Type; num. key.	Type; num. key.	Type; num. pad
Workstation printer	No	No	No	No	Optional; 2
INPUT/OUTPUT DEVICES Serial printer	Opt.; to 180 cps	Std.; to 180 cps	Opt.; to 180 cps	Opt.; to 180 cps	Opt.; 100 cps
Line printer	Opt.; 300 or 600 lpm	Opt.; 300 lpm	Opt.; to 300 lpm	Opt.; 300 to 600 lpm	Std.; 150 lpm
Reel-to-reel tape drive	Opt.; 10,000 cps	Opt.; 10,000 cps	Opt.; 10,000 cps	Opt.; 10,000 cps	Opt.; 20KBS
Cassette/cartridge tape drive	No	Std.; 1,000 cps	Std.; 1,000 cps	Opt.; 1,000 cps	No
CRT	Std.; 24 x 80 char.	Std.; 576 char.	Std.; 576 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.
Other	—	—	Opt.	Opt.	—
COMMUNICATIONS Maximum no. of lines	2	2	2	3	2
Synchronous	Opt.; to 9600 bps	Std.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	No
Asynchronous	Opt.; to 1200 bps	Opt.; to 1200 bps	Opt.; to 1200 bps	Opt.; to 1200 bps	Std.; to 1200 bps
Protocols supported	Async, bisync, SDLC	Async, bisync, SDLC	Async, bisync, SDLC	Async, bisync, SDLC	None
Network architecture supported	IBM SNA	—	—	IBM SNA	—
RJE terminals emulated	3270	UT200, TC 3800	UT200, TC 3800	UT200, TC 3800	—
IBM 3270 emulation	Yes	No	No	Yes	—
SOFTWARE SUPPORT COBOL	Yes	Yes	Yes	Yes	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	No
Assembler	No	No	No	No	Yes
Other programming languages	TAL 2000	TAL-2	TAL-2	TAL-2, -2000	None
Multiprogramming	Yes; 3 partitions	Yes; 2 partitions	Yes; 9 partitions	Yes; 16 partitions	Yes; 3 partitions
Max. no. of jobs run concurrently	3	2	9	16	—
Language complemented in firmware	No	No	No	No	Partially
Op. sys. implemented in firmware	No	No	No	No	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Industrial	Industrial	Industrial	Industrial	Mfg.; health care
Database management system	No	No	No	Yes (1980)	Yes
File access methods supported	Seq. indexed, relative	Seq. indexed relative	Seq. indexed, relative	Seq., indexed, ISAM	Rand.; seq.; index
Software separately priced	Yes; applications only	Yes; applications only	Yes; applications only	Yes; applications only	Yes
Technical help separately priced	No	No	No	No	Yes
LEASE/MAINTENANCE OPTIONS Lease plans available	3 months; 1, 3, 4 yrs.	1, 3, 4 yrs.	3 months; 1, 3, 4 yrs.	3 months; 1, 3, 4 yrs.	—
Maintenance plans available	On-call	On-call	On-call	On-call	On-site
PRICING & AVAILABILITY Purchase price of basic system, \$	6,150	23,960	21,240	20,680	29,500
Monthly rental of basic system, \$	234	546	528	517	Purchase only
Monthly maint. price of basic system, \$	64	144	135	200	250
Monthly maint. bundled with rental, \$	No	No	No	No	—
Purchase price of: additional memory module, \$	800 (16K)	1,160 (8K)	1,160 (8K)	2,000 (32K)	—
additional workstations, \$	2,400	None	1,440	2,160	2,995
additional printer, \$	22,340 (600 lpm)	19,000 (300 lpm)	19,000 (300 lpm)	22,340 (600 lpm)	\$2,500 (100 cps)
Discounts available	Quantity	Quantity	Quantity	Quantity	—
Date of first U.S. delivery	August 1978	May 1976	May 1976	May 1978	1977
Number installed to date	NA	NA	NA	NA	Over 200 (all models)
COMMENTS	For entry level and small DDP	Designed for transaction proc. in distributed or stand-alone environments; industry application software packages are available through distributors	Designed for transaction processing in distributed or stand-alone environments; industry application software packages are avail. through distributors	Six remote work stations on-line concurrently; unlimited in timesharing	—

### All About Small Business Computers

MANUFACTURER AND MODEL	Northrop Data Systems BDS 1000 Series	Northrop Data Systems BDS 2000 Series	Northrop Data Systems BDS 4000 Series	Olivetti BCS 2030 MDLL	Olivetti BSC 2030 FDU
<b>WORD LENGTH, BITS</b>	Variable, 8-32	Variable, 8-32	16	8-bit byte	8-bit byte
<b>CPU</b>					
Model	Microdata 1600	Microdata 1600	Microdata 1600	Intel 8080	Intel 8080
Add time, microseconds	9.68 (7 digits)	9.68 (7 digits)	5	6	6
No. of I/O ports on basic sys. and max.	4	8	2, 8	4; 4	4; 4
<b>INTERNAL STORAGE</b>					
Type	Core	Core	MOS	MOS	MOS
Capacity of basic system, bytes	24K	24K	64K	4K	4K
Maximum capacity, bytes	32K	32K	512K	16K	16K
Increment size, bytes	8K	—	32K	4K	4K
Cycle/access time, microseconds	1.0/NA	1.0/NA	1/NA	1/2.3	1/2.3
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	No	No	No	Std.; 8K bytes	Standard
Maximum diskette storage	NA	NA	NA	—	—
Cartridge disk drive	Std.; 10MB	Std.; 20MB	Std.; 20MB	No	No
Pack disk drive	No	No	—	No	No
Fixed-head disk/drum	No	No	—	No	No
Maximum disk storage	10MB	40MB	500MB	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	4	8	32	1	1
Recommended maximum number	4	8	32	1	1
Keyboard style	Type.; num. pad.	Type.; num. pad.	Type.; num. pad.	Typewriter	Typewriter
Workstation printer	Optional; 4	Optional; 8	Optional; 32	Standard	Standard
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.; 100 cps	Opt.; 100 cps	Opt.; 100 cps	Std.; 100 cps	Std.; 100 cps
Line printer	Std.; 150 lpm	Std.; 150 lpm	Std.; 150 lpm	Opt.; 200 cps	Opt.; 200 cps
Reel-to-reel tape drive	Opt.; 20KBS	Opt.; 20KBS	Opt.; 20KBS	No	No
Cassette/cartridge tape drive	No	No	—	Opt. cast.; 1000 cps	Opt. cast.; 1000 cps
CRT	Std.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.	Standard	Standard
Other	—	—	—	No	No
<b>COMMUNICATIONS</b>					
Maximum no. of lines	4	3	32	1	1
Synchronous	No	No	Opt.; to 9,600 bps	Standard	Standard
Asynchronous	Std.; to 1200 bps	Std.; to 1200 bps	Opt.; to 9,000 bps	No	No
Protocols supported	None	None	Bisync	Bisync	Bisync
Network architecture supported	—	—	—	None	None
RJE terminals emulated	—	—	IBM 2780	IBM 2780	IBM 2780
IBM 3270 emulation	—	—	No	No	No
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	No	No
RPG	No	No	Yes	No	No
FORTRAN	No	No	No	No	No
BASIC	No	No	Yes	Yes	Yes
Assembler	Yes	Yes	Yes	Yes	Yes
Other programming languages	None	None	English Rpt. Writer	No	No
Multiprogramming	Yes; 3 partitions	Yes; 3 partitions	Yes	No	No
Max. no. of jobs run concurrently	—	—	—	1	1
Language complemented in firmware	Partially	Partially	Partially	Fully	Fully
Op. sys. implemented in firmware	Partially	Partially	Partially	Fully	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Mfg.; health care	Mfg.; health care	Mfg.; health care	Business	Whsl., dist., bus.
Database management system	No	No	Yes	No	No
File access methods supported	Rand.; seq.; index	Rand.; seq.; index	Rand.; seq.	Rand., seq.	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	—	—	—	Up to 5 years	Up to 5 years
Maintenance plans available	On-site	On-site	On-site	Contact vendor	Contact vendor
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	34,920	40,385	52,295	9,095	14,950
Monthly rental of basic system, \$	Purchase only	Purchase only	Purchase only	Leases available	Leases available
Monthly maint. price of basic system, \$	283	372	535	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	—	—	—	650 (4K bytes)	650 (4K bytes)
additional workstations, \$	2,995	2,995	2,995	—	—
additional printer, \$	2,500 (100 cps)	2,500 (100 cps)	2,500 (100 cps)	Contact vendor	Contact vendor
Discounts available	—	—	—	None	None
Date of first U.S. delivery	1972	1973	1979	January 1979	January 1979
Number installed to date	Over 200 (all mod.)	Over 200 (all mod.)	Over 200 (all mod.)	NA	NA
<b>COMMENTS</b>					

## All About Small Business Computers

MANUFACTURER AND MODEL	Olivetti BCS 3030	Olivetti P6060	PolyMorphic Systems 8813	PolyMorphic Systems 8810	Prime 450
<b>WORD LENGTH, BITS</b>	8-bit byte	8-bit byte	8	8	16; 32
<b>CPU</b>					
Model	Olivetti 3001	Olivetti 6601, 6602	Intel, NEC; 8080A	Intel, NEC; 8080A	Prime 450
Add time, microseconds	—	—	—	—	1.1
No. of I/O ports on basic sys. and max.	—	—	12,256	12,256	64
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS:	MOS
Capacity of basic system, bytes	40K	16K	64K	64K	256K
Maximum capacity, bytes	56K	48K	56K	56K	1024K
Increment size, bytes	8K	8K	8K, 16K, 48K	8K, 16K, 48K	256K, 512K
Cycle/access time, microseconds	—	—	—	—	.750
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Std.; 1.024M bytes	Std.; 1.024M bytes	390K bytes	390K bytes	Optional
Maximum diskette storage	—	—	—	—	2M bytes
Cartridge disk drive	Opt.; 20M bytes	Opt.; 20M bytes	None	None	Std.; 32-768MB
Pack disk drive	No	No	Opt.; 20M bytes	Opt.; 20M bytes	Opt.; to 2400MB
Fixed-head disk/drum	No	No	NA	NA	Opt.; to 1M byte
Maximum disk storage	20M bytes	20M bytes	20M bytes	20M bytes	—
<b>WORKSTATIONS</b>					
Maximum number connectable	1	1	2	1	32
Recommended maximum number	1	1	2	1	32
Keyboard style	Typewriter	Typewriter	Type.; num. key.	Type.; num. key.	Typewriter
Workstation printer	Optional	Optional	Optional	Optional	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.; 90-175 cps	Opt.; 80-175 cps	Opt.; 110-9600 bps	Opt.; 110-9600 bps	Opt.; 300 lpm
Line printer	Opt.; 300-600 lpm	Optional	NA	NA	Opt.; 1000 lpm
Reel-to-reel tape drive	Optional	Optional	NA	NA	Opt.; 800, 1600 API
Cassette/cartridge tape drive	Cassette; 1000 cps	Cassette; 1000 cps	Opt./NA	Opt./NA	No
CRT	Std.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 64 x 16 char.	Std.; 64 x 16 char.	Opt.; 24 x 80 char.
Other	Opt. paper tape	Opt. paper tape	—	—	Opt.
<b>COMMUNICATIONS</b>					
Maximum no. of lines	1	4	1	1	32
Synchronous	Opt.; to 9600 bps	No	Standard	Standard	Std.; 56KBS
Asynchronous	Opt.; to 1200 bps	Opt.; to 19,200 bps	Standard	Standard	Std.; 9600 bps
Protocols supported	Bisync	None	—	—	Bisync
Network architecture supported	None	None	POLYNET	POLYNET	PRIMENET, X.25
RJE terminals emulated	None	None	No	No	HASP; 2780/3780
IBM 3270 emulation	No	No	No	No	Yes
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	No	Yes
RPG	Yes	No	No	No	Yes
FORTRAN	No	No	Yes	Yes	Yes
BASIC	No	Yes	Yes	Yes	Yes
Assembler	Yes	No	Yes	Yes	Yes
Other programming languages	Yes	No	PASCAL	PASCAL	PL/1, FORMS, MIDAS
Multiprogramming	Yes (2 partitions)	No	No	No	Yes, 31 partitions
Max. no. of jobs run concurrently	1	1	2	1	32
Language complemented in firmware	No	No	Partially	Partially	Partially
Op. sys. implemented in firmware	No	No	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	No
Industry application areas	Whlsl., dist., utilities	Printers, cost, finan.	All	All	Graph., stats.
Database management system	—	No	Yes	Yes	Yes
File access methods supported	Yes	Rand., seq.	All	All	Rand., seq., index
Software separately priced	Yes	Yes	Some	Some	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	Up to 5 years	Up to 5 years	No	No	5-year
Maintenance plans available	Contact vendor	Contact vendor	Factory Ret., third party	Factory Ret., third party	On-site, on-call
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	11,000	6,600	6,750 (approx.)	6750 (approx.)	73,000 (450 HMB)
Monthly rental of basic system, \$	Leases available	Leases available	No	No	—
Monthly maint. price of basic system, \$	56	44	—	—	500
Monthly maint. bundled with rental, \$	No	No	No	No	Yes (lease)
Purchase price of: additional memory module, \$	900 (8K bytes)	900 (8K bytes)	—	—	—
additional workstations, \$	—	—	—	—	—
additional printer, \$	Contact vendor	Contact vendor	—	—	28,000 (1000 lpm)
Discounts available	None	None	Quantity	Quantity	Volume
Date of first U.S. delivery	March 1978	January 1977	1977	1977	First qtr. 1979
Number installed to date	NA	NA	1500	1500	77
<b>COMMENTS</b>					

## All About Small Business Computers

MANUFACTURER AND MODEL	Prime 550	Prime 650	Prime 750	Programmed Control Corp. Prophet 21 Model 1	Programmed Control Corp. Prophet 21 Model 2
WORD LENGTH, BITS	16; 32	16; 32	16; 32	16	16
CPU					
Model	Prime 550	Prime 650	Prime 750	TI 960B	TI 990/10
Add time, microseconds	61	1.1	.5	3.6 (word)	2.8 (word)
No. of I/O ports on basic sys. and max.	64	64	64	1; 22	1; 128
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	512K	512K	512K	32K	32K
Maximum capacity, bytes	2048K	4096K	8192K	128K	2048K
Increment size, bytes	256K, 512K, 1M	256K, 512K, 1M	512K, 1M	8K	8K
Cycle/access time, microseconds	.750	.750	.750	0.7	0.7
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 2M bytes	Opt.; 2M bytes	Opt.; 2M bytes	No	No
Maximum diskette storage	2.4M bytes	2.4M bytes	2.4M bytes	—	—
Cartridge disk drive	Opt.; to 768M bytes	Opt.; to 768M bytes	Opt.; to 768M bytes	Std.; 5M bytes	Std.; ;
Pack disk drive	Opt.; to 2400M bytes	Opt.; to 2400M bytes	Opt.; to 2400M bytes	No	No
Fixed-head disk/drum	Opt.; to 2M bytes	Opt.; to 2M bytes	Opt.; to 2M bytes	No	No
Maximum disk storage	—	—	—	16 units; 40MB	16 units; 1600MB
WORKSTATIONS					
Maximum number connectable	63	63	63	22	64
Recommended maximum number	63	63	63	22	64
Keyboard style	Typewriter	Typewriter	Typewriter	Type., num. key.	Type., num. key.
Workstation printer	Optional	Optional	Optional	Optional	Optional
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 300 lpm	Std.; 30 cps	Opt.; 165 cps
Line printer	Opt.; 1000 lpm	Opt.; 1000 lpm	Opt.; 1000 lpm	Opt.; 250 lpm	Opt.; 250 lpm
Reel-to-reel tape drive	Opt.; 800, 1600 bpi	Opt.; 800, 1600 bpi	Opt.; 800, 1600 bpi	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.
Other	Opt.	Opt.	Opt.	No	No
COMMUNICATIONS					
Maximum no. of lines	63	63	63	—	—
Synchronous	Std.; 56KBS	Std.; 56KBS	Std.; 56KBS	No	Yes
Asynchronous	Std.; 9600 bps	Std.; 9600 bps	Std.; 9600 bps	Opt.; to 1200 bps	Opt.; to 9600 bps
Protocols supported	Async, bisync	Async, bisync	Async, bisync	—	—
Network architecture supported	PRIMENET X.25	PRIMENET X.25	PRIMENET X.25	Prophet 21	Prophet 21
RJE terminals emulated	HASP, 2780/3780	HASP, 2780/3780	HASP, 2780/3780	No	No
IBM 3270 emulation	Yes	Yes	Yes	No	No
SOFTWARE SUPPORT					
COBOL	Yes	Yes	Yes	No	No
RPG	Yes	Yes	Yes	No	No
FORTRAN	Yes	Yes	Yes	No	No
BASIC	Yes	Yes	Yes	No	No
Assembler	Yes	Yes	Yes	No	No
Other programming languages	PL/1, FORMS, MID.	PL/1, FORMS, MID.	PL/1, FORMS, MID.	Prophet 21	Prophet 21
Multiprogramming	Yes; 63 partitions	Yes; 63 partitions	Yes; 63 partitions	Yes; 22 partitions	Yes; 128 partitions
Max. no. of jobs run concurrently	63	63	63	22	64
Language implemented in firmware	Partially	Partially	Partially	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	No	No
General accounting packages	No	No	No	Yes	Yes
Industry application areas	Graph., stats.	Graph., stats.	Graph., stats.	Dist., whsl.	Dist., whsl.
Database management system	Yes	Yes	Yes	Yes	Yes
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	Yes	Yes	Yes	No	No
Technical help separately priced	Yes	Yes	Yes	No	No
LEASE/MAINTENANCE OPTIONS					
Lease plans available	5-year	5-year	5-year	NA	NA
Maintenance plans available	On-site, on-call	On-site, on-call	On-site, on-call	NA	NA
PRICING & AVAILABILITY					
Purchase price of basic system, \$	80,000 (550 HMB)	105,000 (650 HMB)	149,000 (750-1MB)	37,500	59,000
Monthly rental of basic system, \$	—	—	—	Purchase only	Purchase only
Monthly maint. price of basic system, \$	578	685	785	190	395
Monthly maint. bundled with rental, \$	Yes (lease)	Yes (lease)	Yes (lease)	No	No
Purchase price of:					
additional memory module, \$	40,000 (1M byte)	40,000 (1M byte)	40,000 (1M byte)	—	—
additional workstations, \$	—	—	—	4,500	5,250
additional printer, \$	28,000 (1000 lpm)	28,000 (1000 lpm)	28,000 (1000 lpm)	6,250 (180 cps)	7,000 (180 cps)
Discounts available	Volume	Volume	Volume	No	No
Date of first U.S. delivery	First qtr. 1979	First qtr. 1979	Third qtr. 1979	1972	July 1977
Number installed to date	201	11	55	40	25
COMMENTS				Turnkey system is marketed nationwide and in Canada	



## All About Small Business Computers

MANUFACTURER AND MODEL	Programmed Control Corp. Prophet 21 Model 2 Ext.	Q1 Corporation Microlite	Q1 Corporation Q1/LITE	Q1 Corporation Q1/LMC	Qantel Series 100
<b>WORD LENGTH, BITS</b>	16	8-bit byte	8-bit byte	8-bit byte	8
<b>CPU</b>					
Model	TI 990/10	8800	8800	8080	Qantel micro CPU
Add time, microseconds	2.8 (word)	—	—	2	—
No. of I/O ports on basic sys. and max.	1; 128	64; 256	64; 256	11; 32	5; 5
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	32K	16K; 6K ROM	16K; 6K ROM	8K	48K
Maximum capacity, bytes	2048K	64K	64K	64K	64K
Increment size, bytes	8K	16K	16K	8, 16K	16K
Cycle/access time, microseconds	0.7	0.35/0.25	0.35/0.25	0.5/0.3	0.8
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	No	Std.; 400K bytes	Std.; 500K bytes	Std.; 250K bytes	1.3M bytes
Maximum diskette storage	—	—	—	—	2.6M bytes
Cartridge disk drive	Std.; 400M bytes	No	No	Opt.; 24M bytes	—
Pack disk drive	No	Opt.; 54M bytes	Opt.; 54M bytes	No	—
Fixed-head disk/drum	No	Opt.; bubble memory	Opt.; bubble memory	No	—
Maximum disk storage	16 units; 3000MB	2/800K bytes	4/4M bytes	4/1M bytes	—
<b>WORKSTATIONS</b>					
Maximum number connectable	64	16	16	4	2
Recommended maximum number	64	16	16	4	2
Keyboard style	Type.; num. key.	Type.; data entry, key.	Type.; data en., key.	Type.; data en., key.	Type.; num. key.
Workstation printer	Optional	Optional	Standard	Standard	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.; 180 cps	Opt.; 45-200 cps	Std.; 45-200 cps	Std.; 42-200 cps	Opt.; 75 to 150 cps
Line printer	Opt.; 300-900 lpm	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 300 lpm	Opt.; 240 to 600 lpm
Reel-to-reel tape drive	No	Optional	Optional	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 24 x 80 char.	Std.; 12 x 40 char.	Std.; 12 x 40 char.	Std.; 8 x 37 char.	Std.; 1728 char.
Other	No	Plotter, MICR/OCR units, light pen	Plotter, MICR/OCR units, light pen	Plotter, MICR/OCR unit, light pen	No
<b>COMMUNICATIONS</b>					
Maximum no. of lines	—	16	16	8	2
Synchronous	Yes	Std.; to 4800 bps	Std.; to 4800 bps	Opt.; to 2400 bps	Opt.; to 9600 bps
Asynchronous	Opt.; to 9600 bps	Std.; to 1200 bps	Std.; to 1200 bps	Std.; to 9600 bps	Opt.; to 4800 bps
Protocols supported	—	Bisync	Bisync	Bisync	Async., bisync
Network architecture supported	Prophet 21	No	No	No	—
RJE terminals emulated	No	2780	2780	2780	2780/3780
IBM 3270 emulation	No	No	No	No	Yes
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	No	No
RPG	No	No	No	No	Yes
FORTRAN	No	No	No	No	No
BASIC	No	No	No	No	QICBASIC
Assembler	No	Yes	Yes	Yes	REAL
Other programming languages	Prophet 21	PL/1	PL/1	PL/1	None
Multiprogramming	Yes (128 partitions)	Multiprocessing	Multiprocessing	Multiprocessing	Yes
Max. no. of jobs run concurrently	64	—	—	—	2
Language complemented in firmware	No	Partially	Partially	Partially	Partially
Op. sys. implemented in firmware	No	Fully	Fully	Fully	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Dist., whsl.	Acctg.; word proc.	Acctg.; word proc.	Acctg.; word proc.	Dist. CPA
Database management system	Yes	—	—	—	Yes
File access methods supported	Rand., seq., index	Rand., seq., KSAM	Rand., seq., KSAM	Rand., seq., KSAM	Random, seq.
Software separately priced	No	Yes	Yes	No	Some
Technical help separately priced	No	No	No	No	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	NA	Purchase only	Purchase only	Purchase only	Yes
Maintenance plans available	NA	On-call	On-call	On-call	Yes
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	97,500	7,625	21,000	17,950	11,950
Monthly rental of basic system, \$	Purchase only	Purchase only	Purchase only	Purchase only	380
Monthly maint. price of basic system, \$	495	12% per year	10% per year	10% per year	105
Monthly maint. bundled with rental, \$	No	NA	NA	NA	Yes
Purchase price of:					
additional memory module, \$	—	800 (16K)	800 (16K)	800 (16K)	—
additional workstations, \$	5,250	7,500	7,500	4,275 (45 cps)	3,450
additional printer, \$	7,000 (180 cps)	5,400	5,400	5,400	2,950 (150 cps)
Discounts available	No	GSA, quantity	GSA, quantity	GSA, quantity	—
Date of first U.S. delivery	May 1979	July 1978	July 1977	July 1978	May 1980
Number installed to date	7	NA	NA	NA	NA
<b>COMMENTS</b>					

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MANUFACTURER AND MODEL	Qantel Series 200	Qantel Series 300	Qantel 210	Qantel 950	Qantel 960
<b>WORD LENGTH, BITS</b>	8	8	8	8	8
<b>CPU</b>					
Model	Qantel micro CPU	Qantel micro CPU	Qantel micro CPU	Qantel 900/950	Qantel 960
Add time, microseconds	—	—	—	—	—
No. of I/O ports on basic sys. and max.	11; 11	15; 15	6	6	6
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	128K	48K	16K	16K
Maximum capacity, bytes	256K	1,024K	64K	64K	64K
Increment size, bytes	32K	32K	16K	32K	8K, 16K
Cycle/access time, microseconds	0.95	0.95	1.5/1.5	1.5	—
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	No	No	Standard	Optional	Optional
Maximum diskette storage	No	No	5.2M bytes	2.6M bytes	2.6M bytes
Cartridge disk drive	Opt.; 12M bytes	Opt.; 12M bytes	No	Std.; 6-36M bytes	Std.; 6M-12M bytes
Pack disk drive	Opt.; 20-200M bytes	Opt.; 20-200M bytes	No	No	No
Fixed-head disk/drum	—	—	No	No	No
Maximum disk storage	1600M bytes	1600M bytes	NA	36M bytes	300M bytes
<b>WORKSTATIONS</b>					
Maximum number connectable	32	64	1	16	16
Recommended maximum number	32	64	1	—	16
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Standard	Standard	Optional	Standard	Standard
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Std.; 150 cps	Opt.; 75 to 150 cps	Opt.; 45-120 cps	Opt.; 120 cps	Std.; 55 cps
Line printer	Opt.; 240 to 600 lpm	Std.; 300 lpm	Opt.; 300 lpm	Opt.; 300-600 lpm	Opt.; 50-600 lpm
Reel-to-reel tape drive	Opt.; 800-1600 bpi	Opt.; 800-1600 bpi	No	Opt.; 36-72KBS	Opt.; 36-72KBS
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.; 1728 char.	Std.; 1728 char.	Std.; 1728 char.	Std.; 27 x 64 char.	Std.; 1728 char.
Other	No	No	No	Opt. card reader	Opt. card reader
<b>COMMUNICATIONS</b>					
Maximum no. of lines	2	2	1	1	1
Synchronous	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 50K bps	Opt.; to 50K bps	Opt.; to 50KBS
Asynchronous	Opt.; to 4800 bps	Opt.; to 4800 bps	Opt.; to 38,400 bps	Opt.; to 38,400 bps	Opt.; to 38,400 bps
Protocols supported	Async., bisync	Async., bisync	Bisync	Async, bisync	Async, bisync
Network architecture supported	—	—	—	—	—
RJE terminals emulated	2780/3780	2780/3780	—	—	—
IBM 3270 emulation	Yes	Yes	—	—	—
<b>SOFTWARE SUPPORT</b>					
COBOL	No	No	No	No	No
RPG	Yes	Yes	No	No	No
FORTRAN	No	No	No	No	No
BASIC	QICBASIC	QICBASIC	QIC BASIC	QICBASIC	QICBASIC
Assembler	REAL	REAL	Yes	Yes	No
Other programming languages	None	None	No	No	None
Multiprogramming	Yes	Yes	Yes; 5 partitions	Yes	Yes
Max. no. of jobs run concurrently	32	32	2	4	4
Language complemented in firmware	Partially	Partially	Partially	Partially	Partially
Op. sys. implemented in firmware	Partially	Partially	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Dist., CPA	Dist., CPA	Whsl., med., CPA	Whsl., med., CPA	Whsl., dist., CPA
Database management system	Yes	Yes	No	No	Yes
File access methods supported	Random, seq.	Random, seq.	Rand., seq., index	Rand., seq., index	Random
Software separately priced	Some	Some	Some	Some	Some
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	Yes	Yes	—	—	—
Maintenance plans available	Yes	Yes	—	—	—
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	29,950	49,950	11,950	27,900 (Model 950)	29,990
Monthly rental of basic system, \$	975	1,528	275 (1-mo. lease)	642 (1-mo. lease)	688 (1-mo. lease)
Monthly maint. price of basic system, \$	286	379	90	245	275
Monthly maint. bundled with rental, \$	Yes	Yes	—	—	—
Purchase price of:					
additional memory module, \$	2,950 (32K)	2,950 (32K)	1,450 (16K bytes)	1,450 (8K bytes)	2,450 (16K bytes)
additional workstations, \$	3,450	3,450	—	3,450	3,450
additional printer, \$	15,500 (300 lpm)	22,500 (600 lpm)	6,450 (55 cps)	7,450 (55 cps)	7,450 (55 cps)
Discounts available	—	—	—	—	—
Date of first U.S. delivery	May 1980	May 1980	December 1977	First qtr. 1975	NA
Number installed to date	NA	NA	NA	NA	NA
<b>COMMENTS</b>				Program and report generating packages	

## All About Small Business Computers

MANUFACTURER AND MODEL	Qantel 965	Qantel 970	Qantel 975	Qantel 1400	Qantel 1400-2
WORD LENGTH, BITS	8	8	8	8	8
CPU					
Model	Qantel 970	Qantel 970	Qantel 970	Qantel 1400	Qantel 1400-2
Add time, microseconds	—	—	—	—	—
No. of I/O ports on basic sys. and max.	6	6	6	12	12
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	64K	64K	40K	48K
Maximum capacity, bytes	256K	256K	256K	128K	128K
Increment size, bytes	32K	32K	16K, 32K	8K, 16K	8K
Cycle/access time, microseconds	—	—	—	1.1	1.1
MASS STORAGE					
Floppy disk (diskette) drive	Optional	Optional	Optional	Optional	Optional
Maximum diskette storage	2.6M bytes	2.6M bytes	2.6M bytes	2.6M bytes	2.6M bytes
Cartridge disk drive	Optional	Std.; 12M bytes	Optional	Std.; 12-48M bytes	Std.; 12-48M bytes
Pack disk drive	No	No	No	Std.; 25-600M bytes	Std.; 25-600M bytes
Fixed-head disk/drum	Std.; 24M bytes	No	Std.; 25M bytes	No	No
Maximum disk storage	92M bytes	300M bytes	300M bytes	648M bytes	648M bytes
WORKSTATIONS					
Maximum number connectable	16	32	32	64	64
Recommended maximum number	—	—	—	—	—
Keyboard style	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.	Type.; num. key.
Workstation printer	Standard	Standard	Standard	Standard	Standard
INPUT/OUTPUT DEVICES					
Serial printer	Std.; 120 cps	Opt.; 55-120 cps	Std.; 50-100 lpm	Opt.; 120 cps	Opt.; 120 cps
Line printer	Optional	Std.; 50-100 lpm	Optional	Opt.; 300-600 lpm	Opt.; 300-600 lpm
Reel-to-reel tape drive	Std.; 1600 bpi	Opt.; 36-72KBS	Std.; 1600 bpi	Opt.; 36-72KBS	Opt.; 36-72KBS
Cassette/cartridge tape drive	No	—	No	No	No
CRT	Std.; 1728 char.	Std.; 1728 char.	Std.; 1728 char.	Std.; 27 x 64 char.	Std.; 24 x 64 char.
Other	Opt. card reader	Opt.; card reader	Opt.; card reader	Opt. card reader	Opt. card reader
COMMUNICATIONS					
Maximum no. of lines	1	1	1	4	4
Synchronous	Opt.; to 50KBS	Opt.; to 50KBS	Opt.; to 50KBS	Opt.; to 50K bps	Opt.; to 50K bps
Asynchronous	Opt.; to 38,400 bps	Opt.; to 38,400 bps	Opt.; to 38,400 bps	Opt.; to 38,400 bps	Opt.; to 38,400 bps
Protocols supported	Async, bisync	Async, bisync	Async, bisync	Bisync	Bisync
Network architecture supported	—	—	—	—	—
RJE terminals emulated	—	—	—	—	—
IBM 3270 emulation	—	—	—	—	—
SOFTWARE SUPPORT					
COBOL	No	No	No	No	No
RPG	No	No	No	No	No
FORTRAN	No	No	No	No	No
BASIC	QICBASIC	QICBASIC	QICBASIC	QICBASIC	QICBASIC
Assembler	No	No	No	Yes	Yes
Other programming languages	None	None	None	No	No
Multiprogramming	Yes	Yes	Yes	Yes; 30 partitions	Yes; 30 partitions
Max. no. of jobs run concurrently	4	8	8	16	16
Language complemented in firmware	Partially	Partially	Partially	Partially	Partially
Op. sys. implemented in firmware	Partially	Partially	Partially	Partially	Partially
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Whsl., dist., CPA	Whsl., dist., CPA	Whsl., dist., CPA	Whsl., med., CPA	Whsl., med., CPA
Database management system	Yes	Yes	Yes	No	No
File access methods supported	Random	Random	Random	Rand., seq., index	Rand., seq., index
Software separately priced	Some	Some	Some	Some	Some
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	—	—	—	—	—
Maintenance plans available	—	—	—	—	—
PRICING & AVAILABILITY					
Purchase price of basic system, \$	39,500	35,900	59,000	43,900	64,900
Monthly rental of basic system, \$	—	826 (1-mo. lease)	1,378 (1-mo. lease)	1,010 (1-mo. lease)	1,493 (1-mo. lease)
Monthly maint. price of basic system, \$	330	325	482	335	485
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	2,450 (16K bytes)	2,950 (32K bytes)	2,950 (32K bytes)	1,450 (8K bytes)	1,450 (8K bytes)
additional workstations, \$	3,450	3,450	3,450	—	—
additional printer, \$	7,450 (55 cps)	7,450 (55 cps)	7,450 (55 cps)	7,950 (55 cps)	7,950 (55 cps)
Discounts available	—	—	—	—	—
Date of first U.S. delivery	NA	NA	NA	Second qtr. 1977	Second qtr. 1977
Number installed to date	NA	NA	NA	NA	NA
COMMENTS				Program and report generating packages	Program and report generating packages

### All About Small Business Computers

MANUFACTURER AND MODEL	Qantel 1450	Qantel 1450-2	Quodata E-500	Quodata E-660	Quodata E-770
WORD LENGTH, BITS	8	8	12	16	16
CPU					
Model	Qantel 1450	Qantel 1450-2	DEC PDP-81A	DEC PDP-11/34	DEC PDP-11/34
Add time, microseconds	—	—	2.6	3.0	2.16
No. of I/O ports on basic sys. and max.	12	12	—	4; 6	—
INTERNAL STORAGE					
Type	MOS	MOS	Core or MOS	MOS	MOS
Capacity of basic system, bytes	64K	64K	64K	128K	256K
Maximum capacity, bytes	1024K	1024K	256K	256K	256K
Increment size, bytes	32K	32K	32K	32K	—
Cycle/access time, microseconds	—	—	1.2/1.2	0.9/0.45	0.775/0.635
MASS STORAGE					
Floppy disk (diskette) drive	Optional	Optional	Optional	Optional	Optional
Maximum diskette storage	2.6M bytes	2.6M bytes	2M bytes	2M bytes	2M bytes
Cartridge disk drive	Std.; 12M bytes	Std.; 25M bytes	Standard	Standard	Standard
Pack disk drive	No	No	No	Optional	Optional
Fixed-head disk/drum	No	No	No	Optional	Optional
Maximum disk storage	300M bytes	300M bytes	—	—	—
WORKSTATIONS					
Maximum number connectable	64	64	64	64	64
Recommended maximum number	—	—	16	16	16
Keyboard style	Type.; num. key.	Type.; num. key.	Variable	Variable	Variable
Workstation printer	Standard	Standard	Opt.; 8 max.	Opt.; 8 max.	Opt.; 8 max.
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 55 cps	Opt.; 55 cps	Opt.; 180 cps	Optional	Opt.; 180 cps
Line printer	Std.; 300 lpm	Std.; 300 lpm	Opt.; 300-900 lpm	Optional	Opt.; 100-900 lpm
Reel-to-reel tape drive	Opt.; 36-72KBS	Opt.; 36-72KBS	No	Optional	Standard
Cassette/cartridge tape drive	—	—	No	Optional	No
CRT	Std.; 1728 char.	Std.; (2) 1728 char.	Opt.; 1920 char.	Opt.; 24 x 80 char.	Opt.; 1920 char.
Other	Opt.; card reader	Opt.; card reader	Opt. punched card equipment	Opt.	Opt.
COMMUNICATIONS					
Maximum no. of lines	4	4	32	32	63
Synchronous	Opt.; to 50KBS	Opt.; to 50KBS	Optional	Optional	Optional
Asynchronous	Opt.; to 38,400 bps	Opt.; to 38,400 bps	Std.; to 19.2K bps	Standard	Std.; to 9600 bps
Protocols supported	Bisync	Bisync	Bisync	Bisync, SDLC	Bisync, SDLC
Network architecture supported	—	—	DECnet	DECnet	DECnet
RJE terminals emulated	—	—	3780, HASP	3780, HASP	3780, HASP
IBM 3270 emulation	—	—	Yes	Yes	Yes
SOFTWARE SUPPORT					
COBOL	No	No	Yes (subset)	Yes	Yes
RPG	No	No	No	Yes	Yes
FORTRAN	No	No	Yes	Yes	Yes
BASIC	QICBASIC	QICBASIC	Yes	Yes	Yes
Assembler	No	No	Yes	Yes	Yes
Other programming languages	None	None	DIBOL	FOCAL	APL, PASCAL, DIB.
Multiprogramming	Yes	Yes	Yes; 63 partitions	Yes	Yes; 63 partitions
Max. no. of jobs run concurrently	20	20	—	—	—
Language complemented in firmware	Partially	Partially	No	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	No	No
General accounting packages	Yes	Yes	No	Yes	Yes
Industry application areas	Whsl., dist., CPA	Whsl., dist., CPA	General	Educ. and govt.	Educ. and govt.
Database management system	Yes	Yes	No	Yes	Yes
File access methods supported	Random	Random	Random, sequential	Rand., seq., index	Rand., seq., index
Software separately priced	Some	Some	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	—	—	Contact vendor	Contact vendor	Contact vendor
Maintenance plans available	—	—	—	—	—
PRICING & AVAILABILITY					
Purchase price of basic system, \$	44,900	69,900	33,000	47,000	77,500
Monthly rental of basic system, \$	1,033 (1-mo. lease)	1,608 (1-mo. lease)	—	—	—
Monthly maint. price of basic system, \$	335	485	—	—	—
Monthly maint. bundled with rental, \$	—	—	—	—	—
Purchase price of:					
additional memory module, \$	2,950 (32K bytes)	2,950 (32K bytes)	—	—	—
additional workstations, \$	3,450	3,450	—	—	—
additional printer, \$	7,450 (55 cps)	7,450 (55 cps)	—	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	NA	NA	1974	1972	1973
Number installed to date	NA	NA	Over 100	Over 50	Over 50
COMMENTS				See E-930	See E-930

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MANUFACTURER AND MODEL	Quodata E-930	Rexon RX-30	Sperry Univac BC/7-600	Sperry Univac BC/7-700	Sperry Univac BC/7-800
WORD LENGTH, BITS	16 or 32	16	8	8	8
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	DEC PDP-11/70 Variable —	Intel 8086 1-2 (5 digits) 6; 12	Univac T3038 106 (5 digits) 3; 12	Univac T3038 106 (5 digits) 3; 12	Univac T3048 106 (5 digits) 3; 12
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	Core 512K 2048K 64K Variable	MOS 64K 128K 64K 0.6/0.25	MOS 48K 64K 16K 1.0/0.5	MOS 48K 64K 16K 1.0/0.5	MOS 128K 128K 16K 1.0/0.5
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	Optional 2M bytes Optional Std.; 67M bytes Optional —	No — Std.; (1), 20MB No No Opt.; (2), 40MB	Standard 6M bytes No No No —	Optional 4M bytes Opt.; 40M bytes No No —	Optional 4M bytes Opt.; 40M bytes No No —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	64 16 Variable Opt.; 8 max.	8 8 Type.; num. key. Opt.; 8	2 2 Type.; num. key. —	4 4 Type.; num. key. —	6 6 Type.; num. key. —
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Opt.; 180 cpm Opt.; 300-900 lpm Standard No Opt.; 1920 char. Opt.	Opt.; (4), 150 cps Opt.; (4), 300 lpm No No Std.; 1920 char. No	Std.; 200 cps Opt.; 125 lpm No No/No Std.; 1920 char.	Std.; 200 cps Opt.; 125-600 lpm Opt.; 20, 40KBS No/No Std.; 1920 char.	Std.; 200 cps Opt.; 125-600 lpm Opt.; 20, 40KBS No/No Std.; 1920 char.
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	63 Optional Std.; to 9600 bps Bisync, SDLC DECnet 3780, HASP Yes	8 No Std.; 110-9600 bps None No No No	2 Std.; to 9600 bps No Transparent — —	2 Std.; to 9600 bps No Transparent — —	2 Std.; to 9600 bps No Transparent — —
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	Yes Yes Yes Yes Yes APL, PASCAL, DIB. Yes; 63 partitions — No No Yes Educ. and govt. Yes Rand., seq., index Yes Yes	No No No Business BASIC No None Yes; 9 partitions — No Partially Yes Mfg., dist., health Yes Seq., rand., indexed Yes (applications) Yes	No Yes No No No ESCORT Yes; 2 partitions 2 Partially No Yes Dist., manufacturing No Rand., seq., ISAM No Partly	No Yes No No No ESCORT Yes; 2 partitions 4 Partially No Yes Dist., manufacturing No Rand., seq., ISAM No Partly	No Yes No No No ESCORT Yes; 2 partitions 6 Partially No Yes Dist., manufacturing No Rand., seq., ISAM No Partly
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	Contact vendor —	Third party Contract or on-call	5-yr. Various	5-yr. Various	5-yr. Various
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	131,000 — — — — — — — — — 1975 Over 50	29,300 Third party 162 No 4,500 (64K) 2,000 3,000 (150 lpm)* No July 1979 NA	21,795 484 130 No 1,100 (16K) 3,698 5,238 — July 1978 NA	31,200 693 175 No 1,100 (16K) 3,698 5,238 — March 1977 NA	33,475 788 210 No 1,100 (16K) 3,698 5,238 — July 1978 NA
COMMENTS	Data management software for gen. business appl. and software systems specifically designed for educational institutions and government entities	Application software by indep. software house and Rexon dealers; *\$17,200 (300 lpm)	Supports up to 22 workstations; entirely based	Supports up to 4 workstations; disk-based; magnetic tape and diskettes for I/O	Supports up to 6 workstations; two applic. programs and print spooling can be run concurrently

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MANUFACTURER AND MODEL	STC Systems Personna-Data	STC Systems Ultimacc 2000	STC Systems Ultimacc 3000	STC Systems ULTIMACC 4000	Tal-Star Computer Systems TSO
WORD LENGTH, BITS	16	16	16	16	16
CPU Model Add time, microseconds No. of I/O ports on basic sys. and max.	DG Nova 3D 0.7 8; 32	DG Nova 3/12 0.7 8; 32	DG Nova 3D 0.7 8; 32	DG Nova 4 0.7 8; 32	GA 18/30 2.4 —
INTERNAL STORAGE Type Capacity of basic system, bytes Maximum capacity, bytes Increment size, bytes Cycle/access time, microseconds	Core 64K 512k 16K 0.7/0.35	Core 64K 128K 16K 0.7/0.35	Core 64K 512K 16K 0.7/0.35	Core 64K 512 16K 0.7/0.35	Core 128K 256K 16K 1.2
MASS STORAGE Floppy disk (diskette) drive Maximum diskette storage Cartridge disk drive Pack disk drive Fixed-head disk/drum Maximum disk storage	No — Std.; 12-48M Optional No 4; 320M bytes	No — Std.; 12-48M Optional No 4; 48M bytes	No — Std.; 32-64M Optional No 4; 320M bytes	No — Opt. Std.; 80M-320M No 4; 320M bytes	RPO 2 RPO 1-8; 80 or 300MB No —
WORKSTATIONS Maximum number connectable Recommended maximum number Keyboard style Workstation printer	20 20 Numeric keypad Optional	3 3 Type., num. key. Optional	20 20 Type., num. key. Optional	20 20 Typewriter/N Opt.	32 12 Type.; num. key. Opt.; 32
INPUT/OUTPUT DEVICES Serial printer Line printer Reel-to-reel tape drive Cassette/cartridge tape drive CRT Other	Std.; 165 cps Opt.; 150-900 lpm Opt.; 60 cps No Std.; 1920 char.	Std.; 165 cps Opt.; 150-900 lpm Opt.; 60 cps No Std.; 1920 char.	Std.; 165 cps Opt.; 150-900 lpm Opt.; 60 cps No Std.; 1920 char.	Opt.; 165 cps Std.; 300 lpm Opt.; 60 cps No Std.; 1920 —	Std.; 10 cps Std.; 600 lpm Opt.; 20-60KBS With CRT Std.; 24 x 80 char. Opt. paper tape
COMMUNICATIONS Maximum no. of lines Synchronous Asynchronous Protocols supported Network architecture supported RJE terminals emulated IBM 3270 emulation	Unlimited Opt.; to 9600 Opt.; to 1200 Bisync — IBM 2780/3780 Yes	Unlimited Opt.; to 9600 Opt.; to 1200 Bisync — IBM 2780/3780 Yes	Unlimited Opt.; to 9600 Opt.; to 1200 Bisync — IBM 2780/3780 Yes	Unlimited Opt.; to 9600 Opt.; to 1200 Bisync — IBM 2780-3780 Yes	32 Std.; to 9600 bps Opt.; to 9600 bps Bisync No 2780/3780 No
SOFTWARE SUPPORT COBOL RPG FORTRAN BASIC Assembler Other programming languages Multiprogramming Max. no. of jobs run concurrently Language complemented in firmware Op. sys. implemented in firmware General accounting packages Industry application areas Database management system File access methods supported Software separately priced Technical help separately priced	No Yes No Yes Yes English 210 Yes; 50 Varies No No Yes Personnel, Man. Yes Seq., rand., ISAM No No	No Yes No Yes Yes English 210 Yes; 8 Varies No No Yes Dist., publish., appar. Yes Seq., rand., ISAM No No	No Yes No Yes Yes English 210 Yes; 50 Varies No No Yes Dist., publish., appar. Yes Seq., rand., ISAM No No	No Yes No Yes Yes English 210 Yes; 50 Up to num. of I/O No No Yes Dist., publish Yes Seq., rand., ISAM No No	Yes Yes Yes No Yes None Yes (12 part. max.) 32 No No Yes News acctg., dist. Yes Rand., seq., index Yes Yes
LEASE/MAINTENANCE OPTIONS Lease plans available Maintenance plans available	Contact vendor On-call/third party	Contact vendor On-call/third party	Contact vendor On-call/third party	Contact vendor On-call/third party	None Full service, all options
PRICING & AVAILABILITY Purchase price of basic system, \$ Monthly rental of basic system, \$ Monthly maint. price of basic system, \$ Monthly maint. bundled with rental, \$ Purchase price of: additional memory module, \$ additional workstations, \$ additional printer, \$ Discounts available Date of first U.S. delivery Number installed to date	34,900 — NA No 3500 (32K) 2600 7600 (300 lpm) NA 1976 10	34,900 Purchase only 345 No 3500 (32K) 2600 7600 (300 lpm) NA 1973 100	51,000 — 435 No 3500 (32K) 2600 4500 (600 lpm) NA 1975 100	Contact vendor — N/A No N/A 4500 (32K) 2600 4500 (600 lpm) N/A 1979 40	70,000 NA 375 NA 3,250 (16K bytes) 3,600 10,000 (approx.) Contact vendor 1977 8
COMMENTS	Turnkey only including software	Turnkey only including software	Turnkey only including software	Turnkey only including software	Designed as stand-alone or interactive with Tal-Star text processing and composition systems

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MANUFACTURER AND MODEL	Tandem T16/240-1	Tandem T16/212-1	Tandem T16/244-1	Terak 8510A	Texas Instrument DS990 Series Model 1
WORD LENGTH, BITS	16	16	16	16	16 + parity
CPU Model	Tandem T16	Tandem T16	Tandem T16	DEC LSI-11	TI TMS-9900
Add time, microseconds	0.5 (5 digits)	0.5 (5 digits)	0.5 (5 digits)	3.5	4.67 (2-16 bit)
No. of I/O ports on basic sys. and max.	64	256; 1024	256; 1024	1;8	2; 2
INTERNAL STORAGE Type	MOS	Core	MOS	MOS; RAM	MOS, RAM
Capacity of basic system, bytes	96K	192K	192K	64K	64K
Maximum capacity, bytes	480K	448K	512K	64K	64K
Increment size, bytes	96K, 32K	64K	96K, 32K	—	—
Cycle/access time, microseconds	0.5/0.5	0.8/0.5	0.5/0.5	1.2/0.6	0.667/0.667
MASS STORAGE Floppy disk (diskette) drive	No	No	No	Standard	Std.; 1.15M bytes
Maximum diskette storage	NA	NA	NA	4 drives	4.6M bytes
Cartridge disk drive	Opt.; 10M bytes	Opt.; 10M bytes	Opt.; 10M bytes	No	No
Pack disk drive	Opt.; 160M bytes	Opt.; 160M bytes	Opt.; 160M bytes	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	—	—	—	—
WORKSTATIONS Maximum number connectable	—	—	—	8	1
Recommended maximum number	—	—	—	4	1
Keyboard style	Type.; num. key	Type.; num. key	Type.; num. key	Typewriter	Type.; num. key
Workstation printer	—	—	—	Optional	Optional
INPUT/OUTPUT DEVICES Serial printer	Opt.; 30 cps	Opt.; 30 cps	Opt.; 30 cps	Opt.; 60-180 cps	—
Line printer	Opt.; 120-1500 lpm	Opt.; 120-1500 lpm	Opt.; 120-1500 lpm	No	—
Reel-to-reel tape drive	Std.; 36KBS	Std.; 72KBS	Std.; 72KBS	No	No
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.
Other	Opt. card reader	Opt. card reader	Opt. card reader	No	Optional
COMMUNICATIONS Maximum no. of lines	64	2048	2048	8	2
Synchronous	Opt.; 5600 bps	Opt.; 5600 bps	Opt.; 5600 bps	No	Opt.; to 4800 bps
Asynchronous	Opt.; 9600 bps	Opt.; 9600 bps	Opt.; 9600 bps	Std.; 19,200 bps	Opt.; to 9600 bps
Protocols supported	Bisync, TINET	Bisync, TINET	Bisync, TINET	Async	Bisync
Network architecture supported	—	—	—	—	—
RJE terminals emulated	—	—	—	—	2780/3780
IBM 3270 emulation	—	—	—	—	No
SOFTWARE SUPPORT COBOL	Yes	Yes	Yes	No	Yes (Run-Time)
RPG	No	No	No	No	No
FORTRAN	Yes	Yes	Yes	Yes	Yes
BASIC	No	No	No	Yes	Yes
Assembler	No	No	No	Yes	Yes
Other programming languages	TAL	TAL	TAL	UCSD PASCAL	PASCAL Run-Time,
Multiprogramming	Yes, 256 partitions	Yes, 256 partitions	Yes, 256 partitions	Yes	Yes; 1-4 partitions
Max. no. of jobs run concurrently	—	—	—	2	6
Language complemented in firmware	Partially	Partially	Partially	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	No	No
General accounting packages	No	No	No	No	Thru TPP's
Industry application areas	Dist., banking	Dist., banking	Dist., banking	Educ., med., eng.,	Thru TPP's
Database management system	Yes	Yes	Yes	Yes	No
File access methods supported	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., keyed
Software separately priced	Partly	Partly	Partly	Yes	Yes (except TX5-0S)
Technical help separately priced	No	No	No	Yes	No
LEASE/MAINTENANCE OPTIONS Lease plans available	Contact vendor	Contact vendor	Contact vendor	Purchase only	90 days; 1, 3, 5 yrs.
Maintenance plans available	—	—	—	Factory return	On-call, third party
PRICING & AVAILABILITY Purchase price of basic system, \$	59,750	92,800	87,100	7,850	9,450
Monthly rental of basic system, \$	NA	NA	NA	NA	370 (3 yr. lease)
Monthly maint. price of basic system, \$	—	—	—	NA	100
Monthly maint. bundled with rental, \$	—	—	—	NA	Lease only
Purchase price of: additional memory module, \$	—	—	—	NA	NA
additional workstations, \$	—	—	—	—	—
additional printer, \$	—	—	—	3,700 (180 cps)	1,100 (30 cps)
Discounts available	—	—	—	Qty., education	Contact vendor
Date of first U.S. delivery	October 1976	May 1976	May 1976	April 1977	April 1979
Number installed to date	5	10	30	Over 700	—
COMMENTS	Multiprocessor, fault-tolerant, "non-stop" system for on-line, transaction-oriented applications	Multiprocessor, fault-tolerant, "non-stop" system for on-line, transaction-oriented applications	Multiprocessor, fault-tolerant, "non-stop" system for on-line, transaction-oriented applications	Features simultaneous graphics and character display; compact, portable system; compatible with any DEC PDP-11 device	

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MANUFACTURER AND MODEL	Texas Instrument DS990 Series Model 2	Texas Instrument DS990 Series Model 4	Texas Instrument DS990 Series Model 6	Texas Instrument DS990 Series Model 8	Texas Instrument DS990 Series Model 20
<b>WORD LENGTH, BITS</b>	16	16	16	16	16
<b>CPU</b>					
Model	TI 990/5	TI 990/10	TI 990/10	TI 990/10	TI 990/12
Add time, microseconds	5.5 (16 bits)	3.6	3.6	3.6	.552 to 4.16
No. of I/O ports on basic sys. and max.	3; 256	16; 180	16; 180	16; 180	16; 180
<b>INTERNAL STORAGE</b>					
Type	RAM	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	64K	128K	128K	128K	256K
Maximum capacity, bytes	64K	2048K	2048K	2048K	2048K
Increment size, bytes	—	64K	64K	64K	64K
Cycle/access time, microseconds	NA/0.5	.740	.740	.740	.74 main/.35 cache
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Std.: (2) 2.3 M bytes	Opt.: 256K bytes	Opt.: 256K bytes	Opt.: 512K bytes	Opt.: 512K bytes
Maximum diskette storage	4.6M bytes	1024K bytes	7024K bytes	3.3M bytes	3.3M bytes
Cartridge disk drive	Opt.: 2-20M bytes	Std.: 10M bytes	Opt.: (2) 10M bytes	Opt.: 20M bytes	Opt.: 20M bytes
Pack disk drive	Opt.: 2-400M bytes	Std.: 100M bytes	Opt.: (2) 25M bytes	Std.: 100M bytes	Std.: 100 MB
Fixed-head disk/drum	No	No	No	NA	NA
Maximum disk storage	—	10M bytes	25M bytes	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	2	39	39	39	39
Recommended maximum number	2	8	16	16	24
Keyboard style	Typewriter	Type.; num. key	Type.; num. key	Type.; num. key	Type.; num. key
Workstation printer	Optional	Optional	Optional	Optional	Optional
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.: 150 cps	Opt.: 150 cps	Opt.: 150 cps	Opt.: 150 cps	Opt.: 150 cps
Line printer	Opt.: 300, 600 lpm	Opt.: 300, 600 lpm	Opt.: 300, 600 lpm	Opt.: 300, 600 lpm	Opt.: 300, 600 lpm
Reel-to-reel tape drive	Opt.: 4 drives	Opt.: 800, 1600 bps	Opt.: 800, 1600 bpi	Opt.: 800-1600 bpi	Opt.: 800-1600 bpi
Cassette/cartridge tape drive	No	No	No	No	No
CRT	Std.: 1920 char.	Std.: 1920 char.	Std.: 1920 char.	Std.: 1920 char.	Std.: (2) 1920 char.
Other	Opt. card reader	Opt. card reader	Opt. card reader	Opt. card reader	Opt.; card reader
<b>COMMUNICATIONS</b>					
Maximum no. of lines	Std.: 3/Opt.: 16+	varies	Varies	Varies	Varies
Synchronous	Std.: 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps
Asynchronous	Std.: 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps	Opt.: 75 to 9600 bps
Protocols supported	Bisync	Bisync	Bisync	Async, bisync	Async, bisync
Network architecture supported	No	—	—	NA	NA
RJE terminals emulated	IBM 2780/3780	2780/3780	2780/3780	2780/3780	2780/3780
IBM 3270 emulation	No	3270 IDC	3270 IDC	Yes	Yes
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes (Run-Time)	Yes	Yes	Yes	Yes
RPG	No	Yes	Yes	Yes	Yes
FORTRAN	Yes	Yes	Yes	Yes	Yes
BASIC	Yes	Yes	Yes	Yes	Yes
Assembler	Yes	Yes and macro	Yes and macro	Yes and macro	Yes and macro
Other programming languages	PASCAL Run-Time	PASCAL, TIFORM,	PASCAL, TIFORM,	PASCAL, TIFORM	PASCAL, TIFORM
Multiprogramming	No	Yes, variable	Yes, variable	Yes, variable	Yes, variable
Max. no. of jobs run concurrently	Varies	varies	Varies	Variable	Variable
Language complemented in firmware	No	No	No	No	No
Op. sys. implemented in firmware	No	No	No	No	No
General accounting packages	No	No	No	No	No
Industry application areas	NA	No	No	No	No
Database management system	No	Yes, DBMS 990	Yes, DBMS 990	Yes, DBMS 990	Yes, DBMS 990
File access methods supported	Rand., seq., index	Seq., multi-keyed	Seq., multi-key	Seq., multi-key index	Seq., multi-key index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	Yes	Yes	Yes	Yes
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	1, 3, 5 years	90 days; 1, 3, 5 yrs.	90 days; 1,3,5 yrs.	90 cays; 1, 3, 5 year	1, 3, 5 year
Maintenance plans available	On-call, third party	On-call, third party	On-call, third party	On-call, factory return	On-call, factory return
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	12,995	24,500 (H/W only)	44,250 (H/W only)	49,250 (H/W only)	68,500 (H/W only)
Monthly rental of basic system, \$	474 (5 yr. lease)	996 (3 yr. lease)	1,684 (3 yr. lease)	1,804 (3 yr. lease)	2,651 (3 yr. lease)
Monthly maint. price of basic system, \$	143	225	333	378	549
Monthly maint. bundled with rental, \$	Lease only	Yes	Yes	lease only	lease only
Purchase price of:					
additional memory module, \$	NA	1,750 (64K)	3,250 (128K)	1,750 (64K)	3,250 (128K)
additional workstations, \$	—	1,340 (w/o control.)	2,150 (w/ dual control)	1,350 (w/o control)	2,150
additional printer, \$	2,430 (150 cps)	2,745 (150 cps)	2,745 (150 cps)	2,745 (150 cps)	2,745 (150 cps)
Discounts available	Contact vendor	Quantity	Quantity	Quantity	Quantity
Date of first U.S. delivery	June 1979	NA	NA	NA	NA
Number installed to date	NA	NA	NA	NA	NA
<b>COMMENTS</b>					Additional workstation includes dual controller



## All About Small Business Computers

MANUFACTURER AND MODEL	Texas Instrument DS990 Series Model 30	Wang PCS-11	Wang WCS-15	Wang 2200 MVP	Wang 2200T
<b>WORD LENGTH, BITS</b>	16	8-bit byte	8-bit byte	8-bit byte	8-bit byte
<b>CPU</b>					
Model	TI 990/12	Wang 2200 PCS-11	Wang WCS-15	Wang 2200 MVP	Wang 2200T
Add time, microseconds	.552 to 4.16	800 (13 digits)	800 (13 digits)	130 (13 digits)	800 (13 digits)
No. of I/O ports on basic sys. and max.	16; 180	3	3	9	6; 9
<b>INTERNAL STORAGE</b>					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	256K	8K	16K	16K	16K
Maximum capacity, bytes	2048K	32K	32K	64K	32K
Increment size, bytes	64K	8K	8K	16K, 32K	8K
Cycle/access time, microseconds	.74 main/.35 cache	1.6	1.6	0.6	1.6
<b>MASS STORAGE</b>					
Floppy disk (diskette) drive	Opt.; 512K bytes	Opt.; 89-178K bytes	Opt.; 524K bytes	Opt.; 786K bytes	Opt.; 786K bytes
Maximum diskette storage	3.3M bytes	—	—	—	—
Cartridge disk drive	Opt.; 20M bytes	No	No	Opt.; 20M bytes	Opt.; 20M bytes
Pack disk drive	Std.; 200M bytes	No	No	No	No
Fixed-head disk/drum	NA	No	No	No	No
Maximum disk storage	—	—	—	—	—
<b>WORKSTATIONS</b>					
Maximum number connectable	39	1	1	8	4
Recommended maximum number	24	1	1	8	4
Keyboard style	Type.; num. key	Type.; num. key	Type.; num. key	Type.; num. key	Type.; num. key
Workstation printer	Optional	—	—	—	—
<b>INPUT/OUTPUT DEVICES</b>					
Serial printer	Opt.; 150 cps	Opt.; 200 cps	Opt.; 200 cps	Opt.; 200 cps	Opt.; 200 cps
Line printer	Opt.; 300, 600 lpm	Opt.; to 600 lpm	Opt.; to 600 lpm	Opt.; to 600 lpm	Opt.; to 600 lpm
Reel-to-reel tape drive	Std.; 1600 bpi	Opt.; 120KBS	Opt.; 120KBS	Opt.; 120KBS	Opt.; 120KBS
Cassette/cartridge tape drive	No	No	No	No	Cast.; 326 bps
CRT	Std.; (2) 1920 char.	Opt.; to 24 x 80 char.	Std.; 24 x 80 char.	Opt.; 24 x 80 char.	Opt.; 24 x 80 char.
Other	Opt. card reader	Opt. card reader	Opt. card reader	Opt. paper tape	Opt. paper tape
<b>COMMUNICATIONS</b>					
Maximum no. of lines	Varies	1	1	5	5
Synchronous	Opt.; 75 to 9600 bps	Opt.; to 4800 bps	Opt.; to 4800 bps	Opt.; to 4800 bps	Opt.; to 4800 bps
Asynchronous	Opt.; 75 to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	Opt.; to 9600 bps
Protocols supported	Async, bisync	Async, bisync	Async, bisync	Async, bisync	Async, bisync
Network architecture supported	NA	—	—	—	—
RJE terminals emulated	2780/3780	—	—	—	—
IBM 3270 emulation	Yes	—	—	—	—
<b>SOFTWARE SUPPORT</b>					
COBOL	Yes	No	No	No	No
RPG	Yes	No	No	No	No
FORTRAN	Yes	No	No	No	No
BASIC	Yes	Yes	Yes	Yes	yes
Assembler	Yes and macro	No	No	No	no
Other programming languages	PASCAL, TIFORM	None	None	None	None
Multiprogramming	Yes, variable	No	No	Yes; 16 partitions	No
Max. no. of jobs run concurrently	Variable	—	—	16	4
Language complemented in firmware	No	Fully	Fully	Fully	Fully
Op. sys. implemented in firmware	No	Partially	Partially	Partially	Partially
General accounting packages	No	Yes	Yes	Yes	yes
Industry application areas	No	Mfg., dist., insur.	Mfg., dist., insur.	Mfg., dist., insur.	Mfg., dist., insur.
Database management system	Yes, DBMS 990	Yes	Yes	No	Yes
File access methods supported	Seq., multi-key index	Rand., seq., index	Rand., seq., index	Rand., seq., index	Rand., seq., index
Software separately priced	Yes	Yes	Yes	Yes	Yes
Technical help separately priced	Yes	No	No	No	No
<b>LEASE/MAINTENANCE OPTIONS</b>					
Lease plans available	1, 3, 5 year	2, 3, 5 year	2, 3, 5 year	2, 3, 5-year	2, 3, 5-year
Maintenance plans available	On-call, factory return	Contract	Contract	Contract	Contract
<b>PRICING &amp; AVAILABILITY</b>					
Purchase price of basic system, \$	78,900 (H/W only)	4,800	8,700	9,000	5,000
Monthly rental of basic system, \$	2,994 (3 yr. lease)	—	—	—	—
Monthly maint. price of basic system, \$	581	50	63	55	43
Monthly maint. bundled with rental, \$	lease only	Yes	Yes	Yes	Yes
Purchase price of:					
additional memory module, \$	3,250 (128K)	1,300 (8K bytes)	1,300 (8K bytes)	4,000 (32K bytes)	2,200 (16K bytes)
additional workstations, \$	2,150	2,600	2,600	2,600	2,600
additional printer, \$	2,745 (150 cps)	7,000 (200 lpm)	7,000 (200 lpm)	5,000 (200 cps)	7,000 (220 lpm)
Discounts available	Quantity	—	—	—	—
Date of first U.S. delivery	NA	March 1977	February 1978	January 1978	January 1975
Number installed to date	NA	NA	NA	NA	NA
<b>COMMENTS</b>					
	Additional work-station includes dual controller				

### All About Small Business Computers

MANUFACTURER AND MODEL	Wang 2200VP	Wang VS Systems	Wang VS-100	Xerox Diablo 3000	Xerox Diablo 3200
WORD LENGTH, BITS	8-bit byte	32	32	8 + parity	8 + parity
CPU Model	Wang 2200VP	Wang 2200VS	Wang 2200VS-E	Diablo 3000	Diablo 3200
Add time, microseconds	130 (13 digits)	NA	NA	16.7/6 digits	23.9/6 digits
No. of I/O ports on basic sys. and max.	9	8; 16	8; 32		
INTERNAL STORAGE					
Type	MOS	MOS	MOS	MOS	MOS
Capacity of basic system, bytes	16K	128K	256K	32K	24K
Maximum capacity, bytes	64K	512K	512K	64K	64K
Increment size, bytes	16K	64K	64K	16K	8K or 16K
Cycle/access time, microseconds	0.6	0.66	0.66	.410/.250	0.488/0.300
MASS STORAGE					
Floppy disk (diskette) drive	Opt.; 786K bytes	Std.; 318K bytes	Std.; 318K bytes	Std.; 2.5M bytes	Std.; 5M bytes
Maximum diskette storage	—	—	—	5M bytes	20M bytes
Cartridge disk drive	Opt.; 20M bytes	Yes; 45M bytes	Yes; 45M bytes	No	Opt.; 20M bytes
Pack disk drive	No	Yes; 72M bytes	Yes; 72M bytes	No	No
Fixed-head disk/drum	No	No	No	No	No
Maximum disk storage	—	800MB	800MB	—	20M bytes
WORKSTATIONS					
Maximum number connectable	4	32	32	1	9
Recommended maximum number	4	—	—	1	4-9 (job depend.)
Keyboard style	Type.; num. key	Type.; num. key	Type.; num. key	Type.; num. key.	Type.; num. key.
Workstation printer	—	Optional	Option	1 Standard	Opt.; 8 max.
INPUT/OUTPUT DEVICES					
Serial printer	Opt.; 200 cps	Std.; 120 cps	Opt.; 120 cps	Std.; 40, 45 cps	Std.; 40, 45, 200 cps
Line printer	Opt.; to 600 lpm	Opt.; to 600 lpm	—	No; or 200 cps	No
Reel-to-reel tape drive	Opt.; 120KBS	Opt.; 120KBS	Opt.; 120KBS	No	No
Cassette/cartridge tape drive	No	No	No	No/No	No/No
CRT	Opt.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 24 x 80 char.	Std.; 1920, 24 x 80	Std.; 1920, 24 x 80
Other	Opt. paper tape	—	—	—	—
COMMUNICATIONS					
Maximum no. of lines	5	3	3	No	9
Synchronous	Opt.; to 4800 bps	Opt.; to 9600 bps	Opt.; to 9600 bps	No	Opt.; to 9600 bps
Asynchronous	Opt.;	No	No	No	Opt.; to 9600 bps
Protocols supported	Async, bisync	—	—	No	Bisync
Network architecture supported	—	—	—	No	No
RJE terminals emulated	—	—	—	No	IBM 2780
IBM 3270 emulation	—	—	—	No	No
SOFTWARE SUPPORT					
COBOL	No	Yes	Yes	No	No
RPG	No	Yes	Yes	No	No
FORTRAN	No	No	No	No	No
BASIC	Yes	Yes	Yes	No	No
Assembler	No	Yes	Yes	Yes	Yes
Other programming languages	None	Procedure	Procedure	DACL*	DACL*
Multiprogramming	No	Yes; 11 users	Yes; 32 users	Yes; 8	Yes; 16 partitions
Max. no. of jobs run concurrently	4	—	—	8 (7 background)	16 (7 background)
Language complemented in firmware	Fully	Partially	Partially	No	No
Op. sys. implemented in firmware	Partially	Partially	Partially	No	No
General accounting packages	Yes	Yes	Yes	Yes	Yes
Industry application areas	Mfg., dist., insur.	No	No	Dist., mfg., acctg.,	Dist., mfg., acctg.,
Database management system	yes	No	No	No	No
File access methods supported	Rand., seq., index	Virtual index, rand.	Virtual index, rand.	Seq., rand., seq. index	Seq., rand., seq. index
Software separately priced	Yes	Yes	—	Yes (application soft.)	Yes (application soft.)
Technical help separately priced	No	No	—	Yes	Yes
LEASE/MAINTENANCE OPTIONS					
Lease plans available	2, 3, 5-year	2, 3, 5-year	2, 3, 5-year	Various	Various
Maintenance plans available	Contract	Contract	Contract	On-call	On-call
PRICING & AVAILABILITY					
Purchase price of basic system, \$	8,000	22,000	22,000	15,950	18,950
Monthly rental of basic system, \$	—	—	—	Various	Various
Monthly maint. price of basic system, \$	45	235	235	Various	Various
Monthly maint. bundled with rental, \$	Yes	—	—	No	No
Purchase price of: additional memory module, \$	2,500 (16K bytes)	5,000 (64K bytes)	5,000 (64K bytes)	—	—
additional workstations, \$	2,600	2,800	2,800	Various	Various
additional printer, \$	14,000 (400 lpm)	3,200 (120 cps)	3,200 (120 cps)	—	—
Discounts available	—	—	—	—	—
Date of first U.S. delivery	November 1978	December 1977	December 1977	October 1979	December 1976
Number installed to date	NA	NA	NA	NA	NA
COMMENTS				*DACL compiler language is a high-level, Eng.-like language source statement compiler	*DACL compiler language is a high-level, Eng.-like language source statement compiler