

Inforex System 7000



This view of the Inforex System 7000 CRT terminal shows the various key groupings on the keyboard. Immediately to the right of the alphanumeric keyboard is a full cursor control group. To the right of the cursor group is a numeric pad with plus, minus, and field termination keys. The row of elongated keys closest to the screen consists of user-programmable function keys. The elongated keys immediately above the typewriter keyboard numerics are predefined function keys.

MANAGEMENT SUMMARY

The Inforex System 7000 can be used in centralized data entry operations, but its primary aim is to place terminals directly in the user departments. Employees who work with documents on a day-to-day basis can enter data directly, rather than sending the documents to a central point where a control clerk must highlight or transcribe the data to be entered before it can be given to a keystation operator. The concept makes enormous sense because it places the responsibility for the accuracy of the data entered directly with the originating department, and it eliminates the time and effort required to comply with the extra procedures associated with sending critical documents to the data entry activity (counting, figuring control totals, etc.).

The System 7000 is not a full-blown data processing system. The machine contains a microprocessor and can indeed perform arithmetic functions, file management, and report generation, but the intention is that it communicate with a host computer system. This communication occurs only on a batch basis. The processing capability available within the System 7000 is intended to reduce the computational burden on the host processor and to reduce the line costs associated with communicating with it.

While communication with the host processor is not interactive, there can be considerable local interaction between the terminal operator and the 7000 in the course of the keying operation.

Inforex evidently has given a lot of thought to the terminal itself, which is being built to Inforex specifications by Beehive. The keyboard can be detached from the CRT and placed at the most convenient angle for the

A modular disk or diskette based data entry/data processing terminal system.

Single terminal and multiple terminal configurations of up to seven display/keyboard workstations are provided. Diskette or cartridge disk storage is included. User programming is accomplished via a subset of COBOL enhanced with data entry functions. Operating software permits multiple concurrent tasks in a cluster system.

A basic single-terminal system with twin diskette drives, 64K-byte processor and bisynchronous communications sells for \$15,000 or leases for \$385 per month on a 42-month lease, including maintenance.

A four-terminal system with two 10-megabyte disk drives, 64K-byte processor, bisynchronous communications and a 300 lpm printer sells for \$66,150 or leases for \$1,487 per month on a 42-month lease including maintenance.

CHARACTERISTICS

VENDOR: Inforex Inc., 21 North Avenue, Burlington, Massachusetts 18103. Telephone (617) 272-6470.

DATE OF ANNOUNCEMENT: January 1977.

DATE OF FIRST DELIVERY: Third quarter 1977.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: Inforex.

MANUFACTURER: Inforex Inc., 21 North Avenue, Burlington, Massachusetts 18103. Telephone (617) 272-6470.

CONFIGURATION

The System 7000 is available as a single-station remote terminal or as a multi-station cluster system.

The basic *7000 single-terminal* unit consists of a communicating processor with 64K bytes of semiconductor memory, disk or diskette drive and controller, and a keyboard and CRT display. This minimum configuration can be expanded to include a second keyboard and display.

The basic *7000 multiple-terminal system* consists of the communicating processor with 64K bytes of semiconductor memory, disk controller, 10 megabytes of cartridge disk storage, and from one to seven keyboard display terminals. The system can be expanded to accept a serial printer or line printer, one or two magnetic tape units, and one to three additional 10-megabyte disk drives.

User application programs are upward and downward compatible between the single-terminal and multiple-terminal systems.

COMMUNICATIONS

The 7143 Communications Controller utilizes binary synchronous communications (BSC) line protocol and IBM 2780/3780 emulation. The System 7000 provides a batch communications capability only. Transmission speeds up to 9600 bps are available. Communications can take place between the 7000 and a host computer, a 7000 and another System 7000, or a 7000 and another Inforex product (key/disk or file management system).

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operator. The keyboard is one of the most powerful we've seen on a shared-processor keystation. It has a full alphanumeric set arranged in typewriter fashion, full cursor control, a numeric keypad, a group of preprogrammed function keys, and 15 user-programmable function keys.

Another interesting characteristic of the System 7000 is the use of COBOL as the user language and the capability for the user to enter, compile, list, and debug programs on the system. It wasn't too long ago that manufacturer-supplied software made the real difference in choosing a data entry system, because the user generally didn't want to learn how to program the system or write the programs once he learned how. The use of COBOL as the system language removes at least the first objection.

Please pay particular attention to the configuration data in the Characteristics section of this report because the terminology, while quite explicit, can be confusing. For example, all System 7000 configurations communicate with *something*. The system is available in a stand-alone configuration or a cluster configuration. However, the stand-alone configuration can have a second CRT terminal attached, and the cluster configuration can include anywhere from one to seven CRT terminals.

USER REACTION

Datapro contacted five users of the Inforex System 7000 during December 1978 and January 1979. These users had a total of 13 keystations installed on a total of 6 systems. The longest period of reported usage was six months. Ratings were supplied by four of these users; the fifth one had just had the equipment installed and felt it was too soon to rate the system. The ratings supplied by the four users are summarized in the following table.

	Excellent	Good	Fair	Poor	WA*
Overall performance	1	2	0	0	3.3
Ease of operation	2	2	0	0	3.5
Hardware reliability	3	1	0	0	3.8
Maintenance service	4	0	0	0	4.0
Software	2	1	1	0	3.3
Technical support	2	1	1	0	3.3

*Weighted Average on a scale of 4.0 for Excellent.

In one installation, the System 7000 was communicating with a Honeywell 6080 processor, while in another installation the system was communicating with an Inforex 1303 key/disk system. All of the other systems were operating on a stand-alone basis.

One user commented that the system's performance was better than expected, and another stated that he was very pleased with the vendor's support. However, one user reported problems in verbally communicating with Inforex and also indicated dissatisfaction with the System 7000's COBOL compiler because it lacks a cross-reference capability. □

➤ A communications operation on the System 7000 can occur simultaneously with data entry and processing operations.

The System 7000 is equipped with a standard EIA RS-232C interface and can be used over a dialed, leased, or private-line communications facility via an external modem.

The 7132 User Terminal Multiplexer provides the ability to connect up to seven keyboard display terminals to the master terminal. The 7132-to-terminal interface is accomplished via RS-232C for local or remote connection

at up to 19.2K bps or via a local (up to 200 feet) 20-mA current loop interface.

SOFTWARE

The System 7000 operating system is a modular, multi-user, disk-oriented system. It features virtual memory and supports concurrently the functions of data entry, data editing and validation, file management, and data communications. All of these modes can be multiprogrammed and share common facilities.

One of the principal features of the System 7000 software is its support of multi-user, interactive Level II COBOL. It provides the capability for executing multiple COBOL programs concurrently. Multiple terminals can be executing the same program simultaneously.

COBOL programs can also be compiled on the System 7000. Each terminal can be compiling a unique program, or one or more terminals can be engaged in compiling programs while other terminals are performing data entry or other operations.

The virtual memory feature of the System 7000 software is essentially dynamic memory management of non-resident system software and user programs. Up to 200,000 bytes per user are allocated on a demand paging basis.

The supervisor program prevents unauthorized access to programs, file, and data items. It accepts day, date, and time so that system use can be accounted for by user number, job number, task, or any combination thereof.

Password-controlled access is available for read, write, list, copy, and run protection.

Multi-user file directories enable sector and file interlocks for on-line file protection when allocating storage and initializing the system.

The System 7000 utilities include SORT/MERGE via a user-defined procedure that can be executed from a COBOL command or terminal keyboard command.

Input/output routines provide for combination and concurrent I/O transfers between cartridge disk or diskette and magnetic tape units, printer, card reader, or a communications line.

Utility programs are provided to facilitate writing COBOL programs, including provisions for entering (keying), editing, compiling, debugging, and listing programs. Other utilities are provided for maintaining and updating the file directory, sorting disk files, and transferring a file to a different medium.

Two COBOL extensions have been developed by Inforex to adapt the language for data entry. These consist of a Terminal Formatting Package and a Check Digit Package.

The Terminal Formatting Package provides additional COBOL verbs, the capability for defining CRT screen layout and cursor movement, and the ability to define field attributes on a field-by-field basis. Field attributes which can be specified include must enter or must fill, alpha only or numeric only, legal characters, justify, and fill. The user employs these wherever appropriate in setting up the format of each document to be entered.

The Check Digit Package supports modulus 7,10, and 11 checking schemes. The check digit capability can be used to validate a check digit on previously prepared material and also to generate a check digit for a string of characters just keyed.

A single COBOL program can access up to 14 different files. Access to files can be restricted to read only, input/output only, or write and update. Three types of file structures are supported: sequential, direct, and indexed. Indexed files provide for one primary key and up to three secondary keys per record.

Editing and verifying can be performed on a field-by-field or record-by-record basis, or on a file basis. The interactive

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► nature of the System 7000 COBOL permits the user flexibility in deciding how and when editing and verifying will be done.

Communications with another System 7000 configuration, a host mainframe, or another Inforex system can occur simultaneously with data entry and verifying operations. Transmission is via binary synchronous communications line protocol and uses IBM 2780/3780 emulation.

SYSTEM OPERATION

Operation of the System 7000 is directed independently from any terminal designated to perform certain or all tasks. On a multiple-terminal system, certain or all terminals can be designated as COBOL development users, processing users, etc. This feature enables centralized control of user activities if so desired. The master and slave terminals are identical in concept and design from an aesthetic standpoint. The master terminal houses the processor, memory, and communications adapter, while the slave terminals, although seemingly identical, contain no processing hardware.

System software initial loading and maintenance are controlled by the master terminal. The single-terminal system incorporates the same master as is found on the multiple-terminal processing system and operates identically.

SYSTEM COMPONENTS

CONTROL PROCESSOR: The same control processor is included in both the stand-alone and cluster versions of the 7000 system. This is a 16-bit, Nova 1200-compatible micro-processor with an instruction execution time of 1.2 microseconds. The semiconductor memory is expandable in 16K-byte increments up to 128K bytes. Memory access time is 750 nanoseconds.

CRT TERMINAL: Each terminal consists of a 1920-character CRT display with attached movable keyboard. The data keys are arranged in typewriter-style layout. Additional key groupings include a cursor control pad, a 10-key numeric pad, 14 predefined function keys, and 15 programmable function keys. The last-named keys permit the programmer to implement an application-dependent function by means of a single keystroke.

The predefined function keys include: print, forward record, backward record, forward document, backward document, forward tab, backward tab, field erase, screen erase (all data fields), screen clear (all data and formats), new line, fill, re-set, and enter.

The 10-key pad includes plus, minus, and field termination keys. All numeric input applications can be confined to this area of the keyboard.

The cursor control pad includes controls for cursor up line, down line, character left and right, home, forward and backward field, and character insert and delete.

DISKETTE STORAGE: Two diskette storage units provide 1,200,000 characters of storage for the stand-alone system. No expansion is permitted. Diskette storage is available only on the single-terminal configurations.

DISK STORAGE UNIT: The 7301 disk storage unit consists of one fixed disk and one 5440-type removable cartridge disk, each with a capacity of five million bytes, for a total of 10 million bytes per drive. Average head positioning time plus rotational delay is 50 milliseconds, and the bit transfer rate is 2.5 million bits per second. Up to four 10-megabyte disk storage units can be connected to a single system.

MAGNETIC TAPE DRIVE: The 7401 magnetic tape drive is a dual-gap, 9-track unit that records at 800 bpi and 45 inches per second using the NRZI recording technique. The drive accepts a 10.5-inch diameter tape reel with a tape capacity of 2400 feet. The 7402 magnetic tape drive is identical in every respect, except that it records at 1600 bpi utilizing the phase encoding technique. The magnetic tape drives are available only on the 7000 multiple-terminal system. A maximum of two tape drives can be connected to a multiple-terminal system.

PRINTERS: Three different models of printers are available on the 7000 system. The single-station configuration of the 7000 can support one serial printer. The multiple-terminal system can support one line printer plus one or more serial printers in place of an equal number of displays, as well as allowing a serial printer to be attached to the master CRT terminal.

The 1410 serial printer is a 150-character-per-second serial printer.

The 1417 line printer is a 300-line-per-minute drum-type impact printer. When the printer is equipped with a 96-character drum, the print rate drops to 240 lines per minute.

The 1418 line printer is a 600-line-per-minute drum-type impact printer. When the printer is equipped with a 96-character drum, the print rate drops to 436 lines per minute.

PRICING

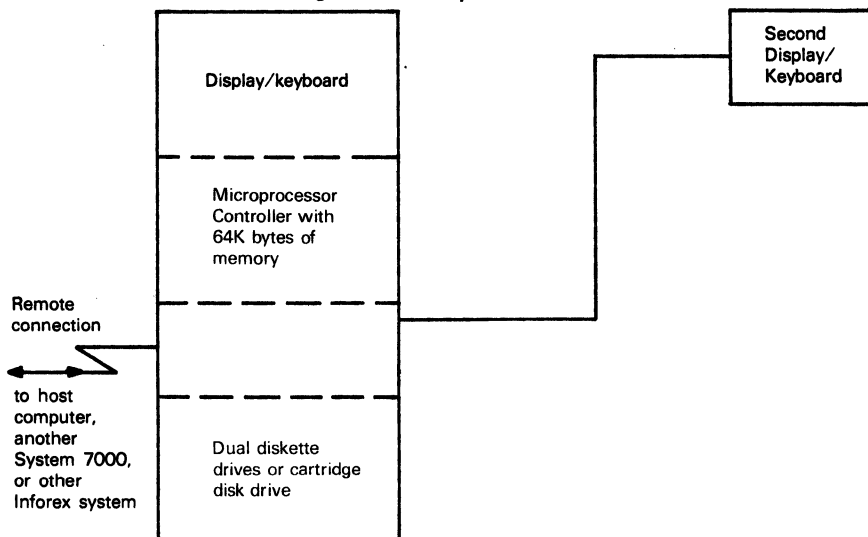
The System 7000 is available for purchase or on a 1-year, 42-month, or 5-year lease, which includes maintenance. A separate maintenance contract is available for purchased units. There is no separate installation charge for the System 7000.

Inforex now offers five basic configurations, which are listed in the table below. Certain peripherals can be purchased or leased separately and added to an appropriate System 7000 configuration. ►

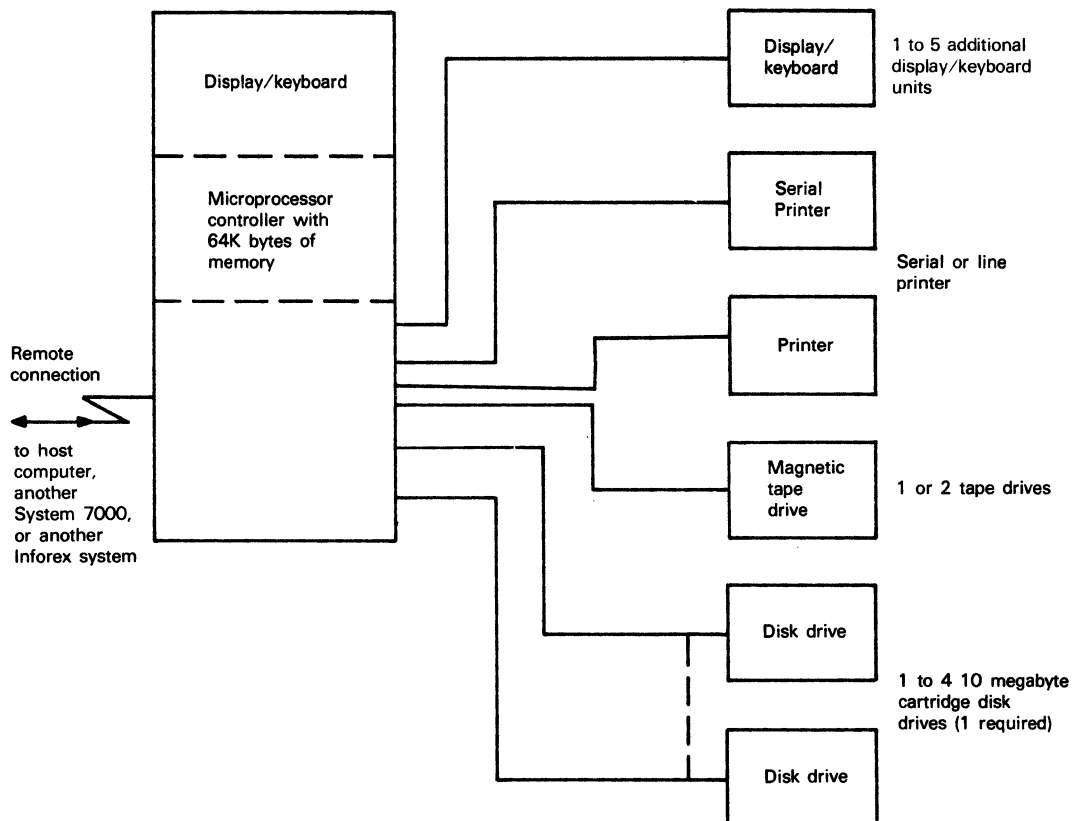
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Configurations

7001/7002 Single Terminal System



Multiple Terminal System



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		Monthly Rental*			
		1-Year Lease	42-Month Lease	Purchase	Monthly Maint.
7001	Diskette-based Single Terminal System (64K-byte processor, double diskette drive, bisynchronous communications, COBOL compiler, operating system, and utilities library)	\$ 463	\$ 385	\$15,000	\$ 81
7002	Disk-based Single Terminal System (64K-byte processor, 10-megabyte disk drive and controller, terminal stand, software described under 7001)	711	656	30,900	184
7003	Disk-based Four-terminal System (64K-byte processor, 10-megabyte disk drive and controller, 1 master terminal, 3 slave terminals, bisynchronous com- munications, multiplexer, serial printer, software described under 7001)	1,144	1,021	45,950	286
7004	Disk-based Four-terminal System (64K-byte processor, 10-megabyte disk drives and controller, 1 master terminal, 3 slave terminals, bisynchronous com- munications, multiplexer, 300-lpm printer and controller, software described under 7001)	1,732	1,487	66,150	416
7005	Disk-based Four-terminal System (64K-byte processor, three 10-megabyte disk drives and controller, 1 master terminal, 3 slave terminals, terminal stand, 9-track 1600-bpi tape drive and controller, bisynchronous communica- tions, multiplexer, serial printer, 300-lpm printer and controller, software described under 7001)	2,402	2,055	92,300	615
7210	Slave Terminal	83	70	2,500	15
7132	Multiplexer	36	30	1,450	7
7143	Communications Controller	18	15	600	10
7301	10-Megabyte Disk Drive	227	193	8,000	75
7330	Disk Cartridge	—	—	100	—
7904	Primary Diskette Subsystem with Controller	150	120	5,300	21
7908	Secondary Diskette Subsystem without Controller	92	78	2,800	16
7913	Expansion Chassis Cabinet	83	70	3,000	NC
7915	Disk Cabinet	25	21	1,050	NC
7401	Tape Drive (9-track, 800 bpi)	232	195	8,600	58
7402	Tape Drive (9-track, 1600 bpi)	263	222	10,500	77
7421	Tape Controller	75	64	3,200	7
1410	Serial Printer	130	110	5,500	40
1417	Line Printer (300 lpm)	425	362	14,900	88
1418	Line Printer (600 lpm)	578	492	18,700	130
7023	Line Printer Controller	41	35	1,750	7

*Includes maintenance for 8 hours per day, 5 days per week.■

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MANAGEMENT SUMMARY

The System 7000 represents the initial Inforex entry into distributed processing. Previous Inforex products were aimed at high-volume, centralized data entry operations. The System 7000 can be employed in such an environment, of course, but the real thrust of this system is to place terminals directly in the user departments. In this way, employees who work with the documents on a day-to-day basis can enter data directly, rather than sending the documents to a central point where a control clerk must highlight or transcribe the data to be entered before it can be given to a keystation operator. The concept makes enormous sense because it places the responsibility for the accuracy of the data entered directly with the originating department, and it eliminates the time and effort required to comply with the extra procedures associated with sending critical documents to the data entry activity (counting, figuring control totals, etc.).

The System 7000 is not a full-blown data processing system. The machine contains a microprocessor and can indeed perform arithmetic functions, file management, and report generation, but the intention is that it communicate with a host computer system. This communication occurs only on a batch basis. The processing capability available within the System 7000 is intended to reduce the computational burden on the host processor and to reduce the line costs associated with communicating with it.

While communication with the host processor is not interactive, there can be considerable local interaction be- ➤

A modular, disk based, data entry/data processing terminal.

Stand-alone or cluster systems of up to seven display/keyboard workstations are provided. Diskette or cartridge disk storage is included. User programming is performed in a subset of COBOL enhanced with data entry functions. Operating software permits multiple, concurrent tasks in a cluster system. File-oriented processing is provided. Cluster system peripherals include magnetic tape drives, card reader, line printer, and up to 40 megabytes of disk storage.

A basic stand-alone terminal with twin diskette drives and a serial printer leases for \$528 per month on a 42-month arrangement including maintenance, and sells for \$20,700.

A typical four-station cluster system with line printer and 20 megabytes of disk storage leases for \$1,996 per month on a 42-month arrangement including maintenance, and sells for \$80,110.

CHARACTERISTICS

VENDOR: Inforex Inc., 21 North Avenue, Burlington, Massachusetts 18103. Telephone (617) 272-6470.

DATE OF ANNOUNCEMENT: January 1977. ➤



This view of the Inforex System 7000 CRT terminal shows the various key groupings on the keyboard. Immediately to the right of the alphanumeric keyboard is a full cursor control group. To the right of the cursor group is a numeric pad with plus, minus, and field termination keys. The row of elongated keys closest to the screen consists of user-programmable function keys. The elongated keys immediately above the typewriter keyboard numerics are pre-defined function keys.

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➤ tween the terminal operator and the 7000 in the course of the keying operation.

Inforex evidently has given a lot of thought to the terminal itself, which is being built to Inforex specifications by Beehive. The keyboard can be detached from the CRT and placed at the most convenient angle for the operator. The keyboard is one of the most powerful we've seen on a shared-processor keystation. It has a full alphanumeric set arranged in typewriter fashion, full cursor control, a numeric keypad, a group of preprogrammed function keys, and 14 user-programmable function keys.

Another interesting characteristic of the System 7000 is the use of COBOL as the user language and the capability for the user to enter, compile, list, and debug programs on the system. It wasn't too long ago that manufacturer-supplied software made the real difference in choosing a data entry system, because the user generally didn't want to learn how to program the system or write the programs once he learned how. The use of COBOL as the system language removes at least the first objection.

Please pay particular attention to the configuration data in the Characteristics section of this report because the terminology, while quite explicit, can be confusing. For example, all System 7000 configurations communicate with *something*. The system is available in a stand-alone configuration or a cluster configuration. However, the stand-alone configuration can have a second CRT terminal attached, and the cluster configuration can include anywhere from one to seven CRT terminals.

Inforex stated that volume shipments of the System 7000 will begin in the third quarter of 1977. □

➤ **DATE OF FIRST DELIVERY:** Third quarter 1977.

NUMBER DELIVERED TO DATE: —

SERVICED BY: Inforex.

CONFIGURATION

The System 7000 is available as a single-station remote terminal or as a multi-station cluster system.

The basic 7000 *stand-alone* unit consists of a communicating processor with 32K bytes of semiconductor memory, diskette controller, twin diskette drives, and a keyboard and CRT display. This minimum configuration can be expanded to include a second keyboard and display and a serial printer.

The basic 7000 *cluster system* consists of the communicating processor with 64K bytes of semiconductor memory, disk controller, 10 megabytes of cartridge disk storage, and from one to seven keyboard display terminals. The cluster system can be expanded to accept a serial printer or line printer, one or two magnetic tape units, and one to three additional 10-megabyte disk drives. In addition, serial printers may be substituted for keyboard display terminals on a one-for-one basis.

User application programs are upward and downward compatible between the stand-alone and cluster systems.

COMMUNICATIONS

The 7143 Communications Adapter utilizes binary synchronous communications (BSC) line protocol and IBM 2780/3780 emulation. The System 7000 provides a batch communications capability only. Transmission speeds up to 9600 bps are available. Communications can take place between the 7000 and a host computer, a 7000 and another System 7000, or a 7000 and another Inforex product.

A communications operation on the System 7000 can occur simultaneously with data entry and processing operations.

SOFTWARE

The System 7000 operating system is a modular, multi-user, disk-oriented system. It features virtual memory and supports concurrently the functions of data entry, data editing and validation, file management, and data communications. All of these modes can be multiprogrammed and share common facilities.

One of the principal features of the System 7000 software is its support of multi-user, interactive Level II COBOL. It provides the capability for executing multiple COBOL programs concurrently. Multiple terminals can be executing the same program simultaneously.

COBOL programs can also be compiled on the System 7000. Each terminal can be compiling a unique program, or one or more terminals can be engaged in compiling programs while other terminals are performing data entry or other operations.

The virtual memory feature of the System 7000 software is essentially dynamic memory management of non-reside system software and user programs. Up to 200,000 bytes user are allocated on a demand paying basis.

The supervisor program prevents unauthorized access to programs, files, and data items. It accepts day, date, and time so that system use can be accounted for by user number, job number, task, or any combination thereof. Password-controlled access is available for read, write, list, copy, and run protection.

Multi-user file directories enable sector and file interlocks for on-line file protection when allocating storage and initializing the system.

Input/output routines provide for combination and concurrent I/O transfers between cartridge disk or diskette and magnetic tape units, printer, card reader, or a communications line.

In the event of a power failure, no data is lost. When power is restored, the system resumes operation from the point of interruption without operator-initiated restore sequences.

Utility programs are provided to facilitate writing COBOL programs, including provisions for entering (keying), editing, compiling, debugging, and listing programs. Other utilities are provided for maintaining and updating the file directory, sorting disk files, and transferring a file to a different medium.

Two COBOL extensions have been developed by Inforex to adapt the language for data entry. These consist of a keystation support package and a check digit package.

The keystation support package provides additional COBOL verbs, the capability for defining CRT screen layout and cursor movement, and the ability to define field attributes on a field-by-field basis. Field attributes which can be specified include must enter or must fill, alpha only or numeric only, legal characters, justify, and fill. The user employs these wherever appropriate in setting up the format of each document to be entered. ➤

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► The check digit package supports modules 7, 10, and 11 checking schemes. The check digit capability can be used to validate a check digit on previously prepared material and also to generate a check digit for a string of characters just keyed.

A single COBOL program can access up to 14 different files. Access to files can be restricted to read only, input/output only, or write and update. Three types of file structures are supported: sequential, direct, and indexed. Indexed files provide for one primary key and up to three secondary keys per record.

Editing and verifying can be performed on a field-by-field or record-by-record basis, or on a file basis. The interactive nature of the System 7000 COBOL permits the user flexibility in deciding how and when editing and verifying will be done.

Communications with another System 7000 configuration (stand-alone or cluster), a host mainframe, or another Inforex system can occur simultaneously with data entry and verifying operations. Transmission is via binary synchronous communications line protocol and uses IBM 2780/3780 emulation.

SYSTEM COMPONENTS

CONTROL PROCESSOR: The same control processor is included in both the stand-alone and cluster versions of the 7000 system. This is a 16-bit, Nova 1200-compatible micro-processor with an instruction execution time of 1.2 microseconds. The semiconductor memory is expandable in 16K-byte increments up to 128K bytes. Access time is 750 nanoseconds.

CRT TERMINAL: Each 7110 (Master) or 7115 (Stand-alone) terminal consists of a 1920-character CRT display with attached movable 7233 keyboard. The data keys are arranged in typewriter-style layout. Additional key groupings include a cursor control pad, a 10-key numeric pad, 14 predefined function keys, and 14 programmable function keys. The last-named keys permit the programmer to implement an application-dependent function by means of a single keystroke.

The predefined function keys include: print, forward record, backward record, forward document, backward document, forward tab, backward tab, field erase, screen erase (all data fields), screen clear (all data and formats), new line, fill, reset, and enter.

The 10-key pad includes plus, minus, and field termination keys. All numeric input applications can be confined to this area of the keyboard.

The cursor control pad includes controls for cursor up line, down line, character left and right, home, forward and backward field, and character insert and delete.

DISKETTE STORAGE: Two 7532 diskette storage units provide 500,000 characters of storage for the stand-alone system. No expansion is permitted. diskette storage is available only on the stand-alone configuration.

DISK STORAGE UNIT: The 7301 disk storage unit consists of one fixed disk and one 5440-type removable cartridge disk, each with a capacity of five million bytes, for a total of 10 million bytes per drive. Average head positioning time plus rotational delay is 50 milliseconds, and the bit transfer rate is 2.5 million bits per second. The disk storage unit is available only on the 7000 cluster system. Up to four 10-megabyte disk storage units can be connected to a single cluster system.

MAGNETIC TAPE DRIVE: The 7401 magnetic tape drive is a dual-gap, 9-track unit that records at 800 bpi and 37.5 inches per second using the NRZI recording technique. The drive accepts an 8.5-inch diameter tape reel with a tape capacity of 1200 feet. The 7402 magnetic tape drive is identical in every respect, except that it records at 1600 bpi utilizing the phase encoding technique. The magnetic tape drives are available only on the 7000 cluster system. A maximum of two tape drives can be connected to a cluster system.

PRINTERS: Four different models of printers are available on the 7000 system. The single-station configuration of the 7000 can support one serial printer. The cluster system can support one line printer plus one or more serial printers in place of an equal number of displays.

The 1415 serial impact printer is a 45-character-per-second, wheel-type printer that provides correspondence-quality printing.

The 1416 serial printer is a 165-character-per-second impact matrix printer. Effective speed is sixty 80-character lines per minute. Characters are formed by a 9-by-7 matrix.

The 1417 line printer is a 300-line-per-minute drum-type impact printer. When the printer is equipped with a 96-character drum, the print rate drops to 240 lines per minute.

The 1418 line printer is a 600-line-per-minute drum-type impact printer. When the printer is equipped with a 96-character drum, the print rate drops to 436 lines per minute.

A 12-channel vertical format unit is available as an option on either of the line printers.

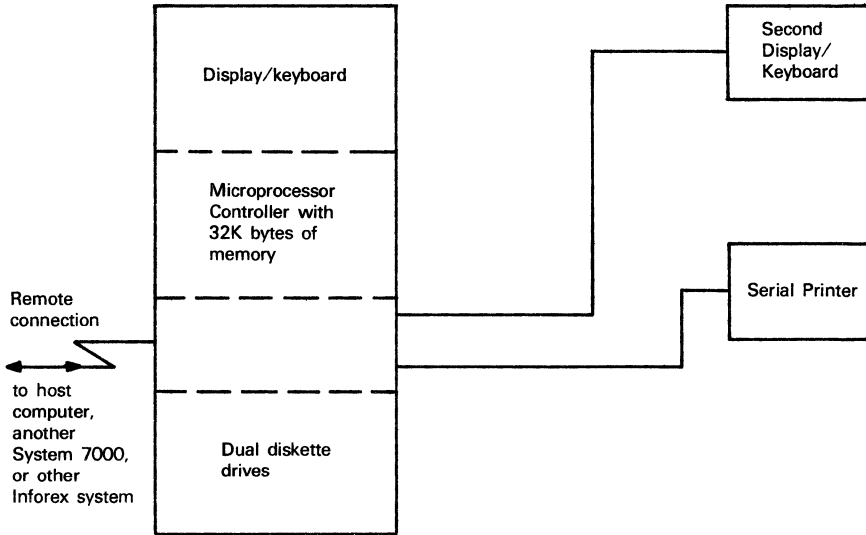
PRICING

The System 7000 is available for purchase or on a 1-year or 42-month lease, which includes maintenance. A separate maintenance contract is available for purchased units. There is no separate installation charge for the System 7000. ►

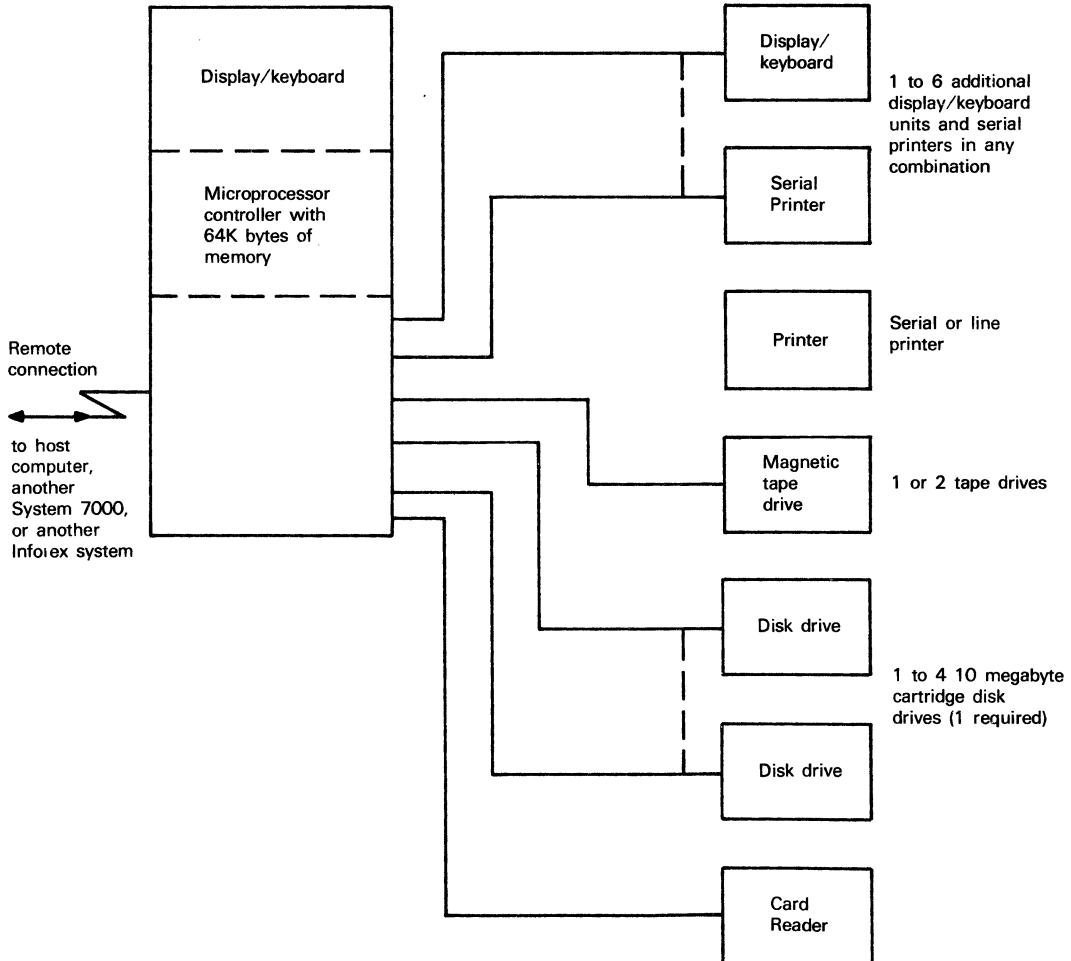
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Configurations

7115 Stand-alone Terminal



7110 Master Terminal (cluster system)



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		Monthly Rental			
		1-Year Lease*	42-Month Lease*	Purchase	Monthly Maint.*
7110	Master Terminal (for cluster system only)	\$507	\$444	\$17,450	\$ 95
7115	Stand-alone Terminal	250	214	9,100	50
7210	Slave Terminal	115	95	4,000	15
7233	Keyboard for any of above	NC	NC	NC	NC
7123	Memory Increment (16K)	57	50	2,150	7
7131	Multiplexer (8-channel)	35	31	1,200	7
7143	Communications Adapter	15	14	200	10
7301	10-Megabyte Disk Drive	382	335	13,000	75
7321	Disk Controller	69	60	2,650	7
7352	Single Diskette Drive	46	38	1,500	8
7372	Diskette Controller (for 2 drives)	28	23	900	5
7401	Tape Drive (800 bpi)	230	203	7,250	58
7402	Tape Drive (1600 bpi)	280	249	8,600	77
7421	Tape Controller (800 bpi)	120	105	4,900	7
7422	Tape Controller (1600 bpi)	140	122	5,750	7
7510	Card Reader	153	129	4,800	33
7520	Card Reader Adapter	7	6	250	1
1417	Line Printer (300 lpm)	490	450	18,860	88
1418	Line Printer (600 lpm)	677	622	23,150	130
1416	Serial Matrix Printer (165 cps)	225	195	7,250	50
1415	Serial Character Printer (45 cps)	225	195	7,750	40
7020	Printer Controller (300/600 lpm)	48	42	1,750	7
7021	Printer Controller (45 cps)	48	42	1,750	7
7022	Printer Controller (165 cps)	7	6	250	1

*Includes maintenance for 8 hours per day, 5 days per week.■