

Burroughs B 900 Series

MANAGEMENT SUMMARY

The Burroughs B 900 Series computers, announced in August 1980, are positioned between the Burroughs B 90 and B 1900 small to mid-range computers. The new series is said to offer from two to eight times the processing power of the earlier B 800 Series offerings. The new processor is software compatible with similar configurations of the B 80, B 90, B 800, B 1800, and B 1900 systems.

The B 920 is the first model in the B 900 Series. It is based on a multiple-processor, multiprogramming architecture that was developed by Burroughs with several user-oriented goals in mind. High speed, high reliability, ease of use, and on-site expandability are all extensions of the multiple-processor hardware. The systems employ Burroughs' virtual memory concept of operation.

The B 920 provides an excellent growth path for the current B 90 series. The users of the B 700 and B 800 also can look to the B 920 for an upgrade in processing power. Many B 700 and B 800 users can retain their existing peripheral equipment, such as disk drives and printers, to reduce their system's overall cost.

Burroughs is targeting the B 920 to compete in the multi-screen, multi-application system marketplace. The responsiveness of the system, the inherent growth potential, and the redundancy capability are all valuable to users today. The B 920 can be compared to the larger configurations of the IBM System/34, Wang VS Systems, NCR 8270, Hewlett-Packard 300 and DEC PDP-11 Family as far as performance and flexibility are concerned. ▶

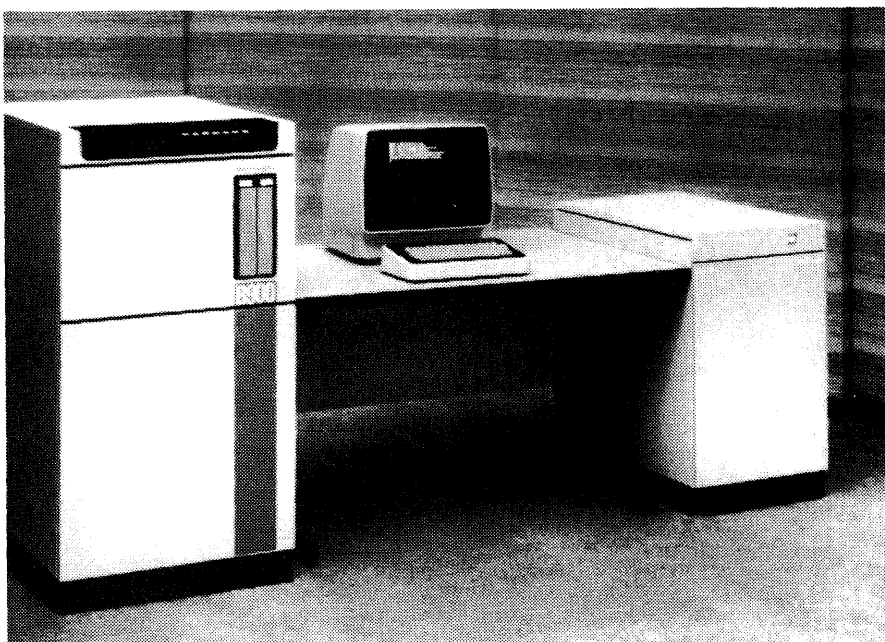
The B 900 Series is positioned between the Burroughs B 90 and B 1900 small to mid-range computers. The B 900 is said to offer from two to eight times the processing power of the earlier B 800 Series, depending on the mix of jobs being run. The B 920, the first model in the series, is an interactive screen-based system for either distributed processing or stand-alone applications. The system utilizes a multiple-processor, multi-programming architecture to provide high speed, high reliability, ease of use, and on-site expandability.

MAIN MEMORY: 608K to 1536K bytes.
DISK CAPACITY: 4.6 to 390 megabytes.
WORKSTATIONS: 1 to 36
PRINTERS: 160 to 650 lpm.
OTHER I/O: magnetic tape, flexible diskette.

CHARACTERISTICS

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

Burroughs is considered to be one of the major competitors in the data processing marketplace, with a broad line of computer equipment spanning the range from small, entry-level systems to very large, multi-user, multiprocessor systems. In addition to data processing equipment, Burroughs also markets magnetic media; business forms and supplies; document counting, encoding, signing, protecting, and disbursing equipment; specialized banking equipment; word processing equipment; facsimile devices; and other related products. Burroughs is international in scope and employs some 50,000 people in more than 120 countries around the globe. ▶



The B 920 supports distributed processing and stand-alone applications with a multi-processor architecture and multi-programming. The system shown here includes: five processing modules expandable, at user option, to eight processors, 44.6 million bytes of disk, an operator display station and a 300 line-per-minute printer.

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➤ The B 920 basic system includes five separate micro-processors, each with its own random access memory, all housed in a single cabinet. The Operating System Processor is configured with 256K bytes of memory to control all of the internal functions of the system. Part of this memory acts as buffer for disk data to be accessible by user programs running on another processor. The buffer is accessible at memory bus speeds to optimize disk interaction with user programs. This processor allocates all system resources, allocates tasks to specific processors, and coordinates all processor activities. This ensures top system performance while maintaining an easy-to-use system. All control routines associated with the Master Control Program (MCP), except for disk, are handled by the operating system processor.

The Disk File Management Processor directly interfaces with the appropriate disk devices for optimal file management. This processor has an associated 32K bytes of memory. ROM memory in the Disk File Management processor performs load functions and automatic confidence tests to insure basic system integrity. The Disk File Processor supports an optional 256K- or 512K-byte cache memory to increase throughput.

Two Task Processors are part of the basic system. Each operates in a multiprogramming mode under the management of the Master Control Program on the operating system processor. Each task processor is configured with a minimum of 128K bytes of memory which stores all user programs and user-oriented utilities during their execution. The appropriate interpreters used to execute the user programs are re-entrant and duplicated in each task processor's memory. If a task processor is to be utilized as a back-up for the operating system processor, it must be configured with a minimum of 256K bytes of memory.

The Data Communications Processor interfaces the attached terminals and workstations. This processor includes 64K bytes of memory which contains all information necessary to the management of the data communications processors and control of the network. The Burroughs Network Definition Language (NDL) forms the basis of the network. One data communications processor can handle up to twelve communications lines, with varying types and speeds, with a total bandpass of 96,000 bits per second. A second data communications processor can be added to increase the total bandpass to 192,000 bits per second. This would not change the available number of lines but would increase the number of terminals that each line could support. Burroughs states that the optimum number of terminals supported is dependent on the job mix. For comparison purposes, a single or dual data communications processor system can interface up to 36 terminals and workstations, while the two data communications processor system can interface the same number of devices but at considerably higher line speeds.

The B 920 features on-site expandability utilizing the original basic system cabinet. Three additional processors ➤

➤ **MODEL: B 920.**

DATE ANNOUNCED: August 1980.

DATE OF FIRST DELIVERY: 4 Qtr. 1980.

NUMBER INSTALLED TO DATE: 250.

DATA FORMATS

BASIC UNIT: 8-bit byte with two decimal digits or one character per word. The microinstruction set has no preferred word or byte boundaries that are visible to the rest of the system.

FIXED-POINT OPERANDS: One to fifteen digits plus sign.

FLOATING-POINT OPERANDS: None.

INSTRUCTIONS: The B 900 is an interpreter-based system using variable micro-logic. Utilizing the microinstruction set, operand lengths permit from 1 to 256 bytes of data to be addressed with a single instruction, and up to eight bits to be addressed in parallel between main memory and the processor.

INTERNAL CODE: ASCII; other media codes, such as EBCDIC, may be translated.

MAIN STORAGE

TYPE: N-channel MOS RAM, 16K bits per chip.

CYCLE TIME: 500 nanoseconds per 8-bit fetch with a 210 nanosecond access time.

CAPACITY: The basic system memory is expandable from 608K bytes to 1.5 megabytes in 128K-byte increments.

CHECKING: Parity standard.

STORAGE PROTECTION: Main storage write operations are permitted only within the limits defined by a base register and a limit register.

RESERVED STORAGE: A variable portion is reserved for microinstruction storage.

CENTRAL PROCESSOR

The B 900 series utilizes a multiprocessor architecture with the B 920 supporting up to eight high-speed 2 megahertz processors. Each processor independently executes instructions from its own associated memory. Also, each processor supports its share of the total processing environment in a multiprogramming mode. The breakdown of processor functions and each associated memory size follows:

- The Operating System Processor manages the internal operations of the system; it contains and executes all the control routines associated with the Master Control Program (MCP), except for disk. This processor's memory provides data storage and data communications buffers as required for peripherals. The operating system processor is called upon by the other processors as the operating system services are needed. It only addresses the other processors when control information is required. The operating system processor also controls the Time-of-Day Clock, the Operator-Display Terminal, and certain other peripherals. The basic system includes 256K bytes of memory for the operating system processor.

- The Disk File Management Processor provides a direct interface to the disk devices for file management. This processor and its associated memory stores and executes ➤

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PERIPHERAL/TERMINALS

DEVICE	DESCRIPTION & SPEED
Operator Display Terminal	Non-printing CRT, 1920 character screen, 24 lines of 80 characters, screen brightness control
MAGNETIC TAPE UNITS	
B 9498	Magnetic tape streamer unit, 160KB transfer rate at 100 ips (data streaming) or 40KB at 25 ips (industry compatible), auto load, self diagnostics
PRINTERS	
B 9251	Serial matrix printer; bidirectional; table top; 132 columns; 10 cpi, 7 x 9 dot matrix; 95-character set (no delete character); speed dependent on number of copies; 1-2=230 cps, 3-4=205 cps, 5-6=180 cps
B 9249-250	Chain printer, 300 lines per minute, 48-character set
B 9249-375	Chain printer, 500 lines per minute, 48-character set
B 9346-3	Band printer, 300 lines per minute, 48-character set, 132 columns, 10 cpi
B 9346-6	Band printer, 650 lines per minute, 48-character set, 132 columns, 10 cpi
B 9349-2	Chain printer, 160 lines per minute, 48-character set, 132 columns
B 9349-3	Chain printer, 250 lines per minute, 48-character set, 132 columns
B 9349-4	Chain printer, 350 lines per minute, 48-character set, 132 columns
TERMINALS	
TD73X Series	Self-Scan display/keyboard, 480 characters, 12 lines by 40 characters, 128 ASCII character set, 5 x 7 dot matrix, red phosphor illumination, various keyboards and peripherals including magnetic card reader, cassette tape drives, and printers; 9600 bps maximum
AP300 Series	Remote journal printer, 90 cps, asynch/synch modem connect, options for passbook printer
MT300 Series	Printer-based terminal system, 4 1/2 or 8 1/2 inch validation/journal, processor, up to 32KB RAM memory, options include 5 or 9 inch monitor, P.I.N. keyboard, magnetic stripe reader, passbook printer, and micro cassette
MT600 Series	User programmable display terminal, 12 inch display, up to 32KB RAM memory, options include validation/journal printer, 80/160KB microdisk
MT700 Series	Display-based programmable terminal system, 600 to 1920 character displays, up to 64KB memory, options include validation/journal printer, passbook printer document printer, micro cassette, magnetic stripe reader, and P.I.N. keyboard
MT900 Series	Input and display system; 9 or 12 inch display monitor, optional keyboards, peripherals include journal printer, 80/160KB microdisk, and magnetic strip reader
TT100 Series	Transaction recorder terminals, options for on-line transaction or on-line commercial receipting operation
TT650 Series	Transaction terminals, logic and display unit, 26- or 30-key keyboard, 150 or 256 character buffer, data set interface or direct connect synch/asynch multipoint, MCR and PIN potential
TU1800 Series	Teller terminals, alpha keyboard, screen, magnetic stripe reader, P.I.N. keyboard, and extended memory optional

➤ can supplement the original system capabilities. These processors could be three additional task processors or a combination of two task processors and a second data communications processor as described earlier. Four task processors can each support up to 256K bytes of memory while the fifth can utilize up to 128K bytes of memory. The processor mix and memory size required is dependent on the number and type of application programs.

The multiple processor architecture allows Burroughs to provide a high level of system availability. The system design ensures minimum down-time. One task processor could fail entirely without impacting job execution on other processors. The jobs from the failed processor, however, would need to be restarted. The MCP would then reallocate each of these jobs to another task processor for execution. An optional Processor Redundancy feature offered by Burroughs provides backup for both the operating system processor and the disk file management processor. After a processor failure, at warmstart, depressing one button on the system control panel will automatically assign task processors to assume responsibility for either or both the operating system processor and the disk file management processor.

This extends the B 920's market applicability into those areas where system availability is key. Financial data applications, distributed inquiry/response functions, and stand-alone business systems each demand a certain level ➤

➤ the physical disk access functions usually associated with the operating system. Disk data flows directly to and from buffer memory which is a part of memory associated with the operating system processor. Buffer memory is accessible by user programs running on a task processor upon completion of a disk access. Buffer memory is accessible at memory bus speeds. ROM memory includes logic to automatically provide system load functions. It also includes the logic capability to automatically perform confidence tests every time the basic system load functions are performed. The disk file management processor includes 32K bytes of memory.

- Two Task Processors are included in the basic system. Each can operate in a multiprogramming mode under the management of the MCP. Each job is reviewed by the MCP in light of the system workload prior to assignment to a particular task processor. This results in an optimal system resource/system performance mix. The 128K bytes of memory associated with each task processor stores all user programs and user-oriented utilities during their period of execution. The interpreters, used to execute user programs, are also stored within each processors memory. All buffers reside within the operating system processor to free maximum memory for the execution of user programs and utilities.
- A Data Communications Processor is also included in the basic system. Please refer to the Communications Control section of this report for further details of its operation.

The multiple processor architecture provides a high level of system availability. If a task processor fails, the jobs running in that processor will need to be restarted but will be allocated by the MCP to another processor. Jobs running on other than the failed processor will continue to execute. ➤

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▷ of system usage. This Burroughs offering maintains a more than acceptable level of system operation to provide the user maximum uptime for his system dollar. The system is based on the B 90 processor and memory modules introduced in 1979. This provides field-proven components to be the basis for the B 900's system reliability.

Several high-performance mass storage devices are available on the B 920. These include both fixed-disk drives and high-speed removable disk drives. The fixed disk drives offer capacities of 18.8, 37.6, 38.6, and 77.2 million bytes of data storage. Removable disk drives are available with 4.6 and 9.2 million bytes of cartridge disk storage or 65.2 and 130.4 million bytes of disk pack storage.

SOFTWARE

The new model operates with Burroughs Computer Management System (CMS) software to insure program compatibility across Burroughs small computer systems. CMS programs are object code compatible to allow program transportability with no reprogramming required.

System software facilitates the use of B 900 systems in distributed data processing and terminal network environments. This does not preclude the use or importance of the B 900 in a stand-alone environment. The operating system, MCP, performs load leveling analysis to optimize system usage. The system continually evaluates itself during processing so that programs can be moved, if required, to other task processors during a wait state to maintain a performance equilibrium.

The B 920 supports CMS COBOL as a subset of ANSI 74 COBOL with extensions and CMS RPG as a standard implementation of RPG plus extensions. These extensions take advantage of the CMS hardware and software capabilities. The combination of COBOL and RPG provides the Burroughs user with capabilities for both on-line applications and batch oriented systems.

CMS also supports a Network Definition Language (NDL) to generate network controller programs. This defines the number of lines, type of terminal, line speeds, modems, and remote or local links required. A Generalized Message Control System (GEMCOS) works with NDL to provide the link between a terminal user and an application program. A Message Processing Language (MPL II) enables the development of specialized on-line applications.

Burroughs offers a wide range of software products to facilitate the use of the B 920 in distributed networks. The B 920 supports RJE, HASP, 2780/3780, 3270, and SNA communications. These programs enable on-line applications to process concurrently with host communications.

The Business Management Systems portion of Burroughs Library of Program Products includes a wide range of ▷

▶ An optional Processor Redundancy feature maintains the system if either the operating system processor or the disk file management processor should fail. The depression of a button on the system control panel will assign data task processor(s), at warm start, to take over the position of the operating system processor and/or the disk file management processor. Any task processors providing back-up for the operating systems processor must be configured with 256K bytes of memory.

CONTROL STORAGE: The 8KB ROM (read-only memory) contains cold and warm start code and a basic maintenance test routine.

REGISTERS: None apparent to users. Internal registers include registers for storage protection, temporary storage areas for data being manipulated by the microprogram and the special-purpose Memory Address Register (MAR), Micro Memory Address Register (μ MAR), and Timing Machine State (TMS) registers. The base and limit registers are used for storage protection, defining the space that may be utilized by the user within user data segments of memory. The MAR register is used to address those main memory locations from which data is to be read or written, while the μ MAR register addresses the portion of main memory from which microinstructions are read, and the TMS registers determine the period of time when a microinstruction remains active. Together, these registers control the timing of all processor operations.

INTERRUPTS: Both external and internal interrupts are present in the B 900. Internal interrupts can occur on a memory parity error, when the Clear button is depressed, or when power is first connected to the system. External interrupts occur when a peripheral device requests attention (active data movement operation required). The B 900 uses an automatic hardware interrupt system, the individual I/O channel notifies the processor when data is ready for processing or transmission.

PHYSICAL SPECIFICATIONS: The multiple processors used in the B 920 system are housed in a single cabinet. The memory associated with each processor, the time-of-day clock, the interval timer, and optional I/O and data comm interfaces are also housed in the same cabinet. This one cabinet is also used to house the integral version of the Burroughs Super Mini Disk unit. The processor cabinet is 44 inches high, 29 inches deep, and 23 inches wide. The weight of the cabinet is 375 pounds (domestic version).

Power requirements for the U.S.A. are 120 VAC + 10 percent, -15 percent, at 60 Hertz. The systems requires 1.7 KVA. The operating environment is from 55 to 104 degrees F., with a humidity tolerance ranging from 20 to 85 percent, noncondensing. Additional air conditioning above normal office levels is not required except in extreme operating environments. The processor cabinet and contents dissipate about a maximum of 5100 BTUs of heat per hour. Service area and general machine requirements indicate the need for a floor area with about a three foot clearance around the system. Models to satisfy all international requirements are also available.

INPUT/OUTPUT CONTROL

I/O CHANNELS: The Operating System Processor contains and executes all of the control programs associated with the Master Control Program (MCP)—except for disk activities. The MCP handles all physical I/O operations and controls the operation of I/O devices. These activities include:

- Shared files
- Printer back-up
- Index file handling
- Locating files

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CONFIGURATION		MEMORY PAGES* — BY PROCESSOR								KB MEMORY TOTAL MEMORY
		PROCESSORS								
		SYSTEM			TASK					
PRO- CESSORS	MEMORY PAGES	DISK	MCP	DCP	T1	T2	T3	T4	T5	
5	9½	½	4	1	2	2				608
5	11½	½	4	1	4	2				736
5	13½	½	4	1	4	4				864
6	15½	½	4	1	4	4	2			992
6	17½	½	4	1	4	4	4			1120
7	19½	½	4	1	4	4	4	2		1248
7	21½	½	4	1	4	4	4	4		1376
8	23½	½	4	1	4	4	4	4	2	1504

*A memory page is defined as 64K bytes.

➤ specialized application programs. These include production control systems and contractor programs for manufacturing, commercial business systems for distribution firms, general financial packages, bank management systems, savings and loan systems, credit union systems, hospital management, student recordkeeping, and government applications. The Business Management Library is constantly expanding its scope and range of programs offered. Burroughs is gearing its marketing approach to provide total, packaged systems to handle a user's business and management concerns and problems. □

- • Data transfer
- Buffer management
- Automatic label recognition
- Error monitoring
- Automatic retry on error detection

These functions are handled directly by the MCP, program logic for these functions does not have to be included in user programs. This simplifies writing application programs and reduces program size.

SIMULTANEOUS OPERATIONS: Each of the B 920 separate processors includes its own memory in order to perform its specialized functions. All processors spend the majority of their time accessing their own associated memory. A Memory Interface Bus (MIB) allows for exchange of information as required. More than one program may be run concurrently within designated processors. The MCP controls automatic multiprogramming by assuring efficient use of each processor on one program while I/O is occurring for other programs.

CONFIGURATION RULES

Maximum configuration parameters for the B 920 series are as follows:

- Up to 1536K bytes of main memory
- Up to 390 megabytes of disk storage
- Up to 36 workstations recommended
- Up to four magnetic tape drives
- Up to two line printers

WORKSTATIONS: A wide range of Burroughs terminals, terminal displays, and workstations are currently available for the B 920. There is a particular emphasis on products designed for the financial community. It is difficult to determine the exact number of terminals supported by the B 920 as both the terminal type, job mix, and system configuration all impact the total applicable system response times. The B 920 is physically capable of supporting up to twelve lines with two having a 38,400 bit-per-second bandpass. Total bandpass of all twelve lines may be up to 96,000 bits per second. The second optional DCP provides up to 192,000 bit-per-second total bandpass for all twelve lines. Each 38,400 bit-per-second line can typically handle nine asynchronous local terminals. An Operator-Display Terminal (ODT), used for communication with the MCP and for monitoring system resources, is mandatory on the B 920.

DISK STORAGE: A broad range of fixed and removable disk storage subsystems is available with the B 920. The system will support up to four disk host controls through the Disk File Management Processor. At least one unit must be a removable device and be designated as Systems Loader. This is required for coldstart and maintenance procedures. In addition to the four disk controls described above, the industry-compatible mini-disk can be attached to the peripheral subsystem through the operating system processor.

MAGNETIC TAPE: The B 920 supports two different types of nine-track, phase-encoded magnetic tape units. The available magnetic tape drives include a device with a 40KB transfer rate and a 25 inches per second read/write speed. The second unit offers two speeds of operation: 100 inches per second for data streaming applications and 25 inches per second for normal read/write operations. Up to four magnetic tape drives can be controlled under MCP.

PRINTERS: A minimum of one and a maximum of two line printers can be configured in the B 920. This provides a total output print capacity ranging from 160 lines per minute to 1200 lines per minute.

MASS STORAGE

BURROUGHS SUPER MINI-DISK (BSM I & II) DRIVES: These floppy disk drives are available either built into the processor cabinet and/or as free-standing units. The BSM subsystem consists of a controller with 200-character

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► buffers and either a dual BSM drive or one or two single BSM drives. The BSM has the capability of reading and recording on both sides of the floppy disk by means of two sets of read/write heads. The BSM I drive is capable of storing one million bytes per diskette (500,000 bytes per side.) Each diskette contains 180 bytes per sector, 32 sectors per track, and 88 tracks per side. Track density is 64 tracks per inch, with a track-to-track access time of 20 milliseconds per single step and a settling time of 80 milliseconds. Average access time is 266 milliseconds, and the data transfer rate is 45K bytes per second.

The BSM II drive is capable of storing three million bytes per diskette (1,500,000 bytes per side). The system offered is an inbuilt dual diskette unit with 6 megabytes of storage. Each diskette contains 180 bytes per sector, 59 sectors per track, and 1142 tracks per side. Track density is 150 tracks per inch, with a track to track access time of 38 milliseconds per single step including a settling time. Average access time is 157 milliseconds and the data transfer rate is 125K bytes per second. BSM I and II are manufactured by Burroughs.

B 9489-17 INDUSTRY-COMPATIBLE MINI-DISK (ICMD) DRIVE: These floppy disk drives are available only as free-standing units. The ICMD subsystem uses a controller similar to the one used in the BSM subsystem. A subsystem is composed of a controller and a single ICMD drive. Unlike the BSM drive, the ICMD drive reads only one side of the diskette. Each diskette stores 243K bytes of data with 128 bytes per sector, 26 sectors per track, and 77 tracks per diskette, including three alternates. Track-to-track access time is 20 milliseconds per single step, and settling time is 10 milliseconds. Average access time is 343 milliseconds, and the data transfer rate is 31K bytes per second. The ICMD is manufactured by Burroughs under license from CDC.

B 9480/B 9481 DUAL CARTRIDGE DISK SUBSYSTEM: Provides low-cost random-access data storage on removable single-platter cartridges. Three dual-drive models are available:

Model	Capacity, bytes	Avg. Access Time
9480-22	4.6 million	146 milliseconds
9481-12	9.2 million	100 milliseconds
9480-12	4.6 million	80 milliseconds

Each drive accommodates one disk cartridge and has two read/write heads, one serving the top and one the bottom recording surface of the cartridge. The disk cartridge is 15 inches in diameter, 1.5 inches high, and weighs 5 pounds. The two drives are "stacked" so that the unit occupies less than five square feet of floor space. Data is recorded in 180-byte segments.

The 9480-22 has an average head positioning time of 125 milliseconds, an average rotational delay of 20 milliseconds, and a data transfer rate of 193K bytes per second. The 9481-12 has an average head positioning time of 60 milliseconds, an average rotational delay of 20 milliseconds, and a data transfer rate of 193K bytes per second. The 9480-12 has an average head positioning time of 60 milliseconds, an average rotational delay of 20 milliseconds, and a data transfer rate of 193K bytes per second. The B 9480/B 9481 subsystem is manufactured by Burroughs.

B 9493 FIXED-DISK DRIVES: Four models of fixed-disk drives are available for use with the B 920:

Model	Capacity, bytes	Avg. Access Time
B 9493-40	38.6 million	55 milliseconds
B 9493-80	77.2 million	55 milliseconds
B 9493-18	18.8 million	55 milliseconds
B 9493-37	37.6 million	55 milliseconds

The 9493-40 and -80 use a Winchester-style fixed-disk drive with four 14-inch aluminum disks with two read/write heads per surface in a sealed unit. The recording density is 5550 bits per inch with 300 tracks per inch. The transfer rate is 888K bytes per second. The 9493-18 and -37 are built using 9.4 megabyte platters. There are 180 bytes per sector, 64 sectors per track, and 406 tracks per surface. The data transfer rate is 384K bytes per second. The 37.6 megabyte drive requires two host controls and only one such drive can be configured per system. The drives are manufactured by Burroughs.

DISK PACK SUBSYSTEMS: Each B 9484 drive houses two removable packs of five platters each. The B 9484 is available in either a 65- or 130-megabyte version. The average access time is 33 milliseconds, average rotational delay is 8.3 milliseconds, and data transfer rate is 605K bytes per second. The required B 9387-41 Disk Pack Drive Controller supports up to three drives (six spindles). A system loader disk device, which could be either a disk cartridge or a Burroughs Super Mini-Disk, is also required. A disk pack cannot be used as the system loader device.

INPUT/OUTPUT UNITS

Burroughs product development policy is such that all terminals and peripherals should be compatible with all processor models. The B 900, then, supports a wide range of peripherals and terminals. The report details only those currently in production.

See Peripherals/Terminals table for units other than the AE systems and Direct Entry Systems described below.

AUDIT ENTRY DATA PREPARATION SYSTEMS: The Burroughs AE systems are minicomputer-based systems that edit, validate, and capture ready-to-process data on magnetic tape cassettes, industry-compatible floppy disks, or Burroughs Super Mini-disks for batch transmission to a host computer. Errors are detected and corrected at the point of original entry. The AE systems simultaneously print an audit journal to assist the operator and to permit subsequent auditing.

There are currently three audit entry data preparation system models offered by Burroughs. The AE 501 system is the oldest entry in the current line, having been announced in September 1975. The AE 511 and AE 513 were introduced in November 1976.

All AE systems include a 28K processor, implemented in large- and medium-scale integrated circuits. Data movement is byte-serial, 8-bit-parallel and is moved one byte at a time from the processor to one of four dedicated I/O channels. One byte of information can be moved within the processor or between the processor, the memory, and the I/O channels in 1 microsecond. The memory is modular in 4K-byte increments and consists of 4K bytes of ROM (read-only memory) used for interpreter bootstrap (cold start) and permanent customer confidence programs, plus up to 28K bytes of RAM (random-access memory) available for interpreter and user storage. All systems have a data communications capability.

The electronic keyboard consists of a standard Burroughs alphanumeric typewriter keyboard, a separate 10-key numeric keyboard, and special function keys. The keyboard includes an upper row of 16 Program Select Keys to implement various program options. The unit printer uses an interchangeable 64-character set and prints at 60 characters/second. A 150-position print line is standard, and spacing is 6 lines per inch. The unit is equipped with a single pin-feed device for handling forms from 3 to 16.75 inches wide. It is capable of handling fanfold, single, or multiple-part forms with folds from 3.5 to 12 inches apart.

The basic AE 511 and AE 513 include the 60-cps matrix printer and a Burroughs Self-Scan 240-character visual ►

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▶ display panel. The AE 511 uses a 239,000-byte magnetic tape cassette for data storage, and the AE 513 uses a Burroughs Super Minidisk having 1 million bytes of data storage capacity.

The basic AE 501 system includes the matrix printer, a magnetic tape cassette unit with a data storage capacity of 239,000 bytes, and one asynchronous or synchronous data communications lines.

The AE systems can communicate in either asynchronous or synchronous mode with a central computer or another terminal over leased or switched lines, via a Two-Wire Direct Interface (TDI) at up to 1000 feet. The line protocols available with the AE systems include Burroughs Basic Mode, Point-to-Point Batch, and the bit-oriented Burroughs Data Link Control (BDLC) procedures.

DIRECT DATA ENTRY: Burroughs direct data entry systems are designed to provide a variety of users with the ability to directly enter and/or retrieve information from the central system, as and when required, without leaving the user departments. Direct data entry systems can be configured with the B 900 processors utilizing Burroughs MT983 visual display units connected either directly or via data sets. These systems can use the Burroughs Terminal Entry software (TE1) and the Burroughs text editor (WMS). The Terminal Entry software (TE1) is a completely generative program product used to format input procedures to fit internal documents and to format output files to be used by application programs. This provides the user with the ability to interface with Burroughs standard program products.

COMMUNICATIONS CONTROL

The B 900 series uses a separate data communications processor (DCP) to interface terminals and workstations. The processor and its associated 64K bytes of memory execute the network as defined by the Burroughs Network Definition Language (NDL). Multiple workstations can be used either locally or at remote sites to support concurrent real-time transaction processing. The DCP can handle up to twelve communications lines of varying types and speeds with a total bandpass of 96,000 bits per second and a maximum line speed of 38,400 bits per second. A second DCP can be added to the basic system to increase the total bandpass to 192,000 bits per second without increasing the number of lines. This would allow twelve lines to run at the maximum line speed of 38,400 bits per second. Each B 900 data communications line and its associated characteristics are outlined below.

<u>Line Discipline</u>	<u>Line Distance</u>	<u>Maximum Line Speed</u>
Asynchronous Modem Connect	No restriction	1,800 bps
Asynchronous Direct Connect (TDI)	250 Feet	38,400 bps
	500 Feet	19,200 bps
	1,000 Feet	9,600 bps
Synchronous/ Bisynchronous Modem Connect	No restriction	9,600 bps
BDLC Modem Connect	No restriction	9,600 bps

Burroughs Network Definition Language (NDL) provides the means to generate a network controller program. This includes the physical connection of terminals and workstations to the B 920. The number of lines, type of terminal, line speeds, modems, and remote or local links required are defined through NDL. Changing terminal locations or installing additional workstations can be easily implemented through NDL.

Burroughs provides a series of program products to ease the connection between B 920 systems and other host mainframes, either from Burroughs or other vendors. This is key to the use of the B 920 in a distributed processing environment with on-line application processing concurrent with host communication. Current distributed processing software products include:

- Burroughs Remote Job Entry (RJE).
- Burroughs System Communication Module (SYCOM)
- IBM HASP Remote Job entry
- IBM 2780/3780 Look-alike Remote Terminal Program
- IBM 3270 Line Protocol Remote Terminal Program
- IBM Systems Network Architecture (SNA) Interface

SOFTWARE

The Burroughs Computer Management System (CMS) integrates the complete line of Burroughs Small Business Computers. CMS programs are object code compatible and will run on similarly configured B 80, B 90, B 800, B 900, B 1800 and B 1900 systems with no reprogramming. Console-based programs are not portable to the B 920. The CMS approach covers the entire system of computer software. It incorporates:

- Master Control Program (MCP)
- Utilities
- Interactive Development Aids
- On-Line Programming
- High-Level Languages and Generative Aids
- Distributed Processing Software
- Conversion Aids
- Business Management Systems

OPERATING SYSTEMS: The Master Control Program (MCP) operating system simplifies the operation and control of the system. The MCP provides two-way communications between the operator and the system in easy-to-understand statements. The system control notifies the operator of missing data, errors, start and end of jobs, and special conditions. The status of all active jobs is provided or request.

In order to fully utilize the features of the multiprocessor architecture on the B 900, the MCP provides the capability of concurrent multiprogramming in each task processor available on the system. The B 900 MCP allocates jobs to task processors depending on the system's workload. Peripheral units are assigned as needed to meet I/O requirements. Memory and processor usage are allocated by the appropriate task processor. Optimum system efficiency and throughput are achieved, in part, due to the B 900 dynamic resource allocation. Processors, memory, peripherals, disk storage, and program priorities are inventoried and assigned to meet job requirements. The MCP automatically recognizes new system configurations to allow the user a hardware growth path without reprogramming constraints.

The B 900 MCP provides for a virtual memory system to enable the B 920 to run programs larger than the available memory size. This enables the MCP to maximize memory utilization to insure a multiprogramming/multiprocessing environment.

The B 900 MCP includes the CMS Shared Files feature to allow multiple update programs concurrent access to the same file or group of files. Two or more programs can concurrently update a file while multiple inquiry programs access the file. Locking and unlocking blocks of data avoids data corruption caused by simultaneous updating of the same data. This assures that programs receive up-to-date records in light of other programs adding, changing, or deleting file records. Shared files are supported on the B 920 in COBOL, RPG, and MPL. This feature applies to both indexed and sequential files. ▶

Burroughs B 900 Series

► The B 920 and MCP offer a printer back-up option to avoid a system stoppage caused by several programs simultaneously requesting one printer. The printer back-up option automatically diverts printer files to disk if no printer is available. Also, if the option is set to "Auto," the file will be printed without any operator action as soon as a printer becomes available. The printer back-up option also provides the following features: selective printing of parts of a file, printing multiple copies automatically (up to 99 copies), saving the back-up file to provide restart capabilities, and sequencing print jobs to minimize paper changes.

The B 900 provides a contiguous fixed disk feature that allows a fixed-disk unit or series of fixed-disk units with multiple platters to be treated as one large contiguous disk instead of several small ones. Several advantages are accrued by this approach including optimization of head movement to provide greater throughput, efficient storage of large files, and simpler disk management considerations.

Logging is an important feature of the MCP. The System Log acts as a diary of all system events which occurred since the previous log was printed. This provides a permanent record for future reference. The current log can be displayed and printed as required. The Maintenance Log records the performance of the B 920 hardware and peripherals. This may be used to highlight potential faults in a device before a hard failure.

The B 900 MCP provides automatic multiprogramming to run segments of multiple programs concurrently. The MCP automatically allocates memory areas, initiates I/O operations, provides automatic error handling procedures, and allocates resources according to program priorities. MCP automates many programming operations such as: memory allocation loading routines, file opening and closing, input/output procedures, indexed file handling, program library calls, error handling, and other "housekeeping" functions.

LANGUAGES: MCP accepts source programs in COBOL, RPG, NDL, and MPL II. High-level languages provide portability of application programs between CMS systems. All CMS systems support the same high-level languages and use the same compilers to generate common executable object code. NDL was discussed in the Communications Control section of this report.

CMS COBOL is a subset of ANSI '74 COBOL. Several extensions developed by Burroughs take advantage of CMS system software and hardware capabilities. These include: shared files, interface to console printers and displays, and file attributes.

CMS RPG is a standard implementation of RPG with some extensions for use in a CMS environment. These RPG extensions provide the following functions: shared files, interface to console printers and displays, and file attributes.

GEMCOS is Burroughs' Generalized Message Control System. It works with NDL to provide the link between a terminal user and an application program. GEMCOS is used to generate a Message Control System (MCS) with the following functions: (1) restrict the access of users only to programs which they are qualified to run, (2) route messages between terminals and applications, (3) record all messages for use at a later time if recovery is required.

CMS Message Processing Language (MPL II) is a high-level language designed for the development of specialized on-line applications. This language is typically used to generate a unique Message Control System (MCS) where GEMCOS either does not provide a specific network function or when MCS requirements need to be extremely defined to a specialized task.

UTILITIES: A wide range of utilities are available for the B 920. Common CMS utilities include sorts, file dump, file load, file lists, directory maintenance, and media conversion. A new version of CONFIGURER is available on the B 920 to provide facilities to assign resources specific to a multiprocessor system.

The CMS Automatic Run Control System (ARCS) enables automatic execution of predefined sequences of commands and programs of a repetitive nature from a single statement. ARCS is used to sequence back-up routines, batch-file updates, print routines and compilations, and help provide for unattended system operation.

An On-Line REPORTER is available to generate customized reports on the B 920. Users without a computer background can define reports interactively from a workstation, extract required information from a data file, and immediately print it. The report can also be stored on disk for future inquiry. This eliminates the need for multiple distribution of large reports with their inherent storage and handling problems. On-Line REPORTER provides the following capabilities:

- Data selection based on record type, range of records, conditions, or run-time supplied data
- Report formatting
- Conditions
- Statistical and summary information

DOMAIN provides a simple method of developing custom inquiry and file maintenance programs. DOMAIN is an interactive tool to define specialized inquiry and file maintenance requirements. It allows the user to inquire into records on a disk file, to create a disk file, and to add, delete, and maintain records on a disk file.

CANDE is an interactive system used to create and update source and data files through a simple but powerful set of editing commands. CANDE enables the initiation of compiles and other operating system commands. On-Line programming with CANDE will support multiple users concurrent with the execution of other applications and development aids.

RPG EDIT provides the main features of CANDE except that it is designed specifically for the RPG programming language. RPG Edit allows interactive prompting and editing of RPG specifications. This results in a faster turnaround time on RPG program development.

ODESY features include:

- Data Entry prompted by screen formats customized for the users needs.
- Data audit and verification.
- Interactive existence checking on indexed files.
- Masterfile data retrieval via user written inquiry program interface.
- Reformatting of data before output.
- Statistical reporting.
- Optional formatted journal listing.

APPLICATION SOFTWARE: An MCS and NDL defined controller are a requirement of all application systems. These controllers are available with most Burroughs screen-based programs in a pre-defined form.

Burroughs Library of Program Products includes Business Management Systems and specialized application program products. Burroughs program products are available for wholesalers, utilities, contractors, manufacturers, hospitals, government, financial institutions, and other major areas of ►

Burroughs B 900 Series

► small business computer applications. Software and application program products are separately licensed and priced.

PRICING

POLICY: Burroughs offers the B 900 systems for either purchase or lease. In addition to the standard one-year lease, Burroughs offers three-year and five-year plans at an approximate discount of five percent for each additional year.

The Burroughs equipment lease agreement includes equipment maintenance based on use of the equipment during one eight-hour period per day. Additional extra-shift charges are billable for maintenance coverage on a 24-hour/day, 7-day/week plan.

EQUIPMENT: The components and prices of the packaged B 900 systems are listed in the EQUIPMENT PRICES section, which follows. The maintenance prices shown are based on an annual maintenance billing.

Equipment Prices

		<u>Purchase Price</u>	<u>Annual Maint.</u>	<u>1-year Lease</u>	<u>3-5 year Lease</u>
PACKAGED SYSTEMS					
B 920-SYS	B 900 System including B 900 Processor Cabinet with Time of Day Clock Interval Timer, five B 900 Processors, one 32KB and one 64KB Memory Module, and four 128K bytes Memory Modules for a total system memory of 608K bytes	\$21,484	\$ 823	\$ 816	\$ 775
PROCESSORS					
B 900-2	B 900 Processor	1,500	84	50	44
PROCESSOR OPTIONS — REDUNDANCY KITS					
MP 1180-B	IOSM PROM 1 Kit (Cartridge)	1,500	83	82	78
MP 1189-E	IOSM PROM 3 Kit (3/6 mb BSMD)	1,500	83	82	78
MP 1184-F	IOSM PROM 4 Kit (1 mb BSMD)	1,500	83	82	78
MEMORY					
BD 4064-2	64K byte memory module	750	36	25	22
BD 4128-2	128K byte memory module	1,500	60	50	44
MASS STORAGE					
MP 1480-B	Disk loader — B (Cartridge)	850	92	28	24
MP 1489-E	Disk loader — E (3/6 mb BSMD)	850	92	28	24
MP 1484-F	Disk loader — F (1 mb BSMD)	850	66	28	24
B 9489-1	1 megabyte integral Burroughs Super Mini-Disk	910	351	34	30
B 9489-21	3/6 megabyte integral Burroughs Super Mini-Disk	3,000	469	186	167
MP 1436	3/6 megabyte retrofit kit	1,175	132	59	58
B 9480-22	4.6 megabyte dual disk cartridge	5,010	1,148	296	278
B 9481-12	9.2 megabyte dual disk cartridge	10,163	1,656	452	430
B 9493-18	18.8 megabyte fixed disk	5,500	911	352	317
B 9493-37	37.6 megabyte fixed disk	8,500	1,109	485	460
B 9493-40	38.6 megabyte fixed disk	12,000	945	505	480
B 9493-80	77.2 megabyte fixed disk	14,500	1,120	593	533
B 9387-11	Disk pack drive with controller, 65.2 megabytes	35,020	1,488	968	825
B 9387-12	Disk pack drive with controller, 130.4 megabytes	47,380	1,488	1,310	1,117
B 9484-51	Dual disk pack drive increment, 130.4 megabytes	20,000	1,096	643	609
MP 1480	Disk control for 1 megabyte BSMD/cartridge/18/37 megabyte fixed disk	874	92	29	25
MP 1493	Disk control for 3/6 megabyte BSMD/ and 38/77 megabyte fixed disk	874	92	29	25
MP 1484	Disk control for disk pack systems	1,100	77	37	35
B 9489-17	Industry-compatible mini disk, single drive, free-standing unit	3,296	308	122	110
MP 1417	Industry-compatible mini disk control	874	92	29	25
MAGNETIC TAPE EQUIPMENT					
MP 1498	Streamer Tape Control	1,295	160	84	76
B 9498	Magnetic Tape Streamer, 40KB, 9 channel	7,500	450	248	248
PRINTERS					
B 9249-250	Line printer; 250 lines per minute, 64 character set; or 300 lines per minute; 48 character set	8,490	793	314	283
B 9249-375	Line printer; 375 lines per minute, 64 character set; or 500 lines per minute, 48 character set	12,500	1,169	463	417
B 9346-3	Line printer; 300 lines per minute, 64 character set; or 320 lines per minute, 48 character set	11,500	1,076	347	322
B 9346-6	Line printer; 600 lines per minute, 64 character set; or 650 lines per minute, 48 character set	14,000	1,309	434	388
B 9349-2	Line printer; 160 lines per minute, wide line printer	5,500	880	183	165
B 9349-3	Line printer; 250 lines per minute, wide line printer	6,500	990	217	194
B 9349-4	Line printer; 350 lines per minute, wide line printer	7,500	1,100	250	225
MP 1200	Line Printer Control	604	43	20	17
B 9251	Serial matrix printer, 230 cps, bidirectional	3,320	360	111	99
CONSOLES					
MP 9361-2	Operator Display Terminal (MT 983)	2,495	264	124	120
MP 1361	ODT Control	600	36	20	18
TERMINALS					
AE501	Audit entry data preparation system	10,238	782	304	295
AE511	Audit entry data preparation system	10,558	1,082	427	415
AE513	Audit entry data preparation system	10,764	1,334	422	410
AP310	90CPS Remote journal printer asynch/synch modem connect	2,350	172	99	96
AP310-1	AP310 with tear-off blade	2,350	172	99	96

Burroughs B 900 Series

Equipment Prices

		<u>Purchase Price</u>	<u>Annual Maint.</u>	<u>1-year Lease</u>	<u>3-5 year Lease</u>
TERMINALS					
MT355	Printer-based terminal: 4½ inch validation/journal and processor	3,063	207	135	131
MT356	Printer-based terminal: 4½ inch validation/journal, MTS11 processor	3,090	207	134	130
MT357	Printer-based terminal: 4½ inch validation/journal, MTS11 processor, 32KB RAM memory	3,090	207	134	130
MT326	Printer-based terminal: 8½ inch validation/journal and MTS11	3,190	298	139	135
MT327	Printer-based terminal: 8½ inch validation/journal, MTS11 processor, 32KB RAM memory	3,190	298	139	135
MT686	User programmable display terminal; 12 inch display monitor, FDLI processor, 16KB	2,740	237	141	136
MT687	User programmable display terminal; 12 inch display monitor, FDLII processor, 32KB	3,440	293	172	167
MT710	12 inch interactive TPL display/processor	5,525	486	230	223
TP138	Expanded alphanumeric keyboard	550	54	23	22
MT755	Display-based programmable terminal; 5 inch 600-character display monitor and processor, 64KB	2,625	242	131	127
MT795	Display-based programmable terminal; 9 inch 960/1920-character display monitor and processor, 64KB	2,725	249	136	132
MT785	Display-based programmable terminal; 12 inch 960/1920-character display monitor and processor, 64KB	2,925	266	146	142
MT983	Input and display system; 12 inch monitor and processor	3,015	293	151	146
TD731	Input and display system; 480-character display/control, 2000-character display memory, 3000-character data comm buffer, Burroughs standard basic data comm procedures, asynch data set/direct connect comm interface	2,715	375	120	116
TD732	Input and display system; 480 character display/control, 2000-character display memory, 3000-character data comm buffer, Burroughs standard basic data comm procedures, asynch data set/direct connect comm interface, peripheral capable	2,865	375	130	126
TD733	Input and display system; 480-character display/control, 2000-character display memory, 3000-character data comm buffer, Burroughs standard basic data comm procedures, synchronous data set comm interface	2,715	375	120	116
TD734	Input and display system; 480-character display/control, 2000-character display memory, 3000-character data comm buffer, Burroughs standard basic data comm procedures, synchronous data set comm interface, peripheral capable	2,865	375	130	126
TT100	On-line transaction terminal with standard software:				
TT102-2	includes software for Commercial Bank or Thrift/Credit Union applications, includes eight accumulators	3,410	172	137	133
TT102-3	includes software for Commercial Bank, Transaction Audit without S.P. Passbook, or Transaction Audit with S.P. Passbook applications; includes 16 accumulators	3,548	172	143	139
TT102-4	TT102-3 with 32 accumulators	3,705	172	146	142
TT142-3	includes software for Commercial Bank, Transaction Audit with or without S.P. Passbook, and Thrift/Credit Union applications, includes 16 accumulators	3,940	235	157	152
TT142-4	includes software for Commercial Bank, Transaction Audit without S.P. Passbook, or Transaction Audit with S.P. Passbook; includes 32 accumulators	4,175	235	166	161
TT650-1	Logic and display unit, 26-key keyboard, 150-character buffer, data set interface, Burroughs synch/asynch multipoint, MCR and P.I.N. potential	995	102	51	49
TT651-1	Logic and display unit, 26-key keyboard, 150-character buffer, direct connect, Burroughs asynch multipoint, MCR and P.I.N. potential	995	127	51	49
TT650-2	Logic and display unit, 30-key keyboard, 256-character buffer, data set interface, Burroughs synch/asynch multipoint, MCR and PIN potential	1,080	102	53	51
TT651-2	Logic and display unit, 30-key keyboard, 256-character buffer, direct connect, Burroughs asynch multipoint, MCR and P.I.N. potential	1,080	115	53	51
TU1806	Teller terminal, alpha keyboard	8,495	738	359	348
TU1807	Teller terminal, alpha, screen	10,070	855	498	483
TU1856	Teller terminal, alpha, APR	9,702	829	421	408
TU1857	Teller terminal, alpha, screen, APR	10,878	861	560	543
COMMUNICATIONS EQUIPMENT					
MP2001	Data comm interface (DCI)	750	60	25	24
MP2002	Data comm (BDLC)	995	60	33	32
MP2003	Data comm I/O extender cable	100	N/C	3	3

SOFTWARE

		<u>Limited Time Plan</u>		<u>Unlimited Time Plan</u>	
		<u>Monthly Lic. Fee</u>	<u>Annual License Fee</u>	<u>Initial Charge</u>	<u>12 Mo. Payments</u>
SYSTEM SOFTWARE					
CM900 COB	COBOL Compiler	\$ 65	\$ 1,825	\$ 175	\$ 347
CM900 RPG	RPG Compiler	49	1,375	132	261
CM900 NDL	Network Definition Language Compiler	50	900	N/A	90
CM900 MPL	Message Processing Language Compiler	50	900	N/A	90
CM900 UTL	Utilities	15	540	N/A	54
CM900 DIT	Data Comm Instal. Tool	N/A	N/A	N/A	N/C
CM900 MCP	Computer Management System	100	2,500	N/A	250
CM900 RJE	Burroughs Standard RJE	20	550	53	105
CM900 SYC	Burroughs SYCOM	27	750	72	143
CM900 BNS	Burroughs Network Services	139	3,900	374	741
CM900 HSP	IBM 360-20 HASP RJE	30	825	79	157
CM900 R37	IBM 2780/3780 Look-Alike	30	825	79	157
CM900 R32	IBM 3270 Protocol	30	825	79	157
CM900 SNA	IBM SNA Interface	70	1,950	187	371

Burroughs B 900 Series

SOFTWARE

Limited Time Plan	Unlimited Time Plan		
	Monthly Lic. Fee	Initial Charge	12 Mo. Payments

► DEVELOPMENT AIDS

CM900 RPO	On-Line REPORTER	90	2,160	207	368
CM900 DOM	DOMAIN	68	1,620	155	276
CM900 AEU	Audit Entry Host Utility	21	490	47	59
CM900 INQ	CMS Inquiry	34	810	78	138
CM900 TE1	Terminal Entry for B 900 TDS Control MCS, CANDE and ODES Y	30	1,080	104	150
CM900 CON	IBM S/32 to B 900 Conversion	N/A	600	58	N/C
CM900 GMB	GEMCOS (Basic Modules)	25	700	67	84
CM900 GMT	GEMCOS (TCL Compiler Mod.)	27	750	72	90
CM900 GMF	GEMCOS (Formatting Module)	18	500	48	60
CM900 GMC	GEMCOS (Complete System)	81	1,945	186	233
B 900 WMS	Word Management System	105	2,500	240	300

APPLICATION PROGRAMS

Production Control System I (Manufacturing)

B 900 MC1	Bill of Material (can be freestanding)	66	1,590	152	191
B 900 MG1	Stock Status (Bill of Material or Order Release required)	56	1,345	129	161
B 900 ME1	Word Center & Routing (can be freestanding)	66	1,590	152	191
B 900 MJ1	Costing (Bill of Material or Order Release required)	48	1,150	110	138
B 900 MP1	MBMS Payroll	85	2,030	195	244
B 900 MS1	Order Release (requires Stock Status)	47	1,135	109	136
B 900 MH1	Job Cost Actual (Order Release required)	95	2,270	218	272
B 900 MQ1	On-Line Data Entry/Inquiry	34	810	78	97
B 900 MR1	Material Requirements Planning (Bill of Material or Order Release required)	149	3,565	342	428
B 900 MGL	Mfg. General Ledger	60	1,435	138	172

Contractor BMS Program Products (Manufacturing)

B 900 CM2	Data Base Maintenance (must order another BMS module)	N/C	N/C	N/C	N/C
B 900 CP2	Payroll and Labor Cost	71	1,705	163	205
B 900 CA2	Accounts Payable	71	1,705	163	205
B 900 CJ2	Job Cost Reporting	47	1,135	109	136
B 900 CG2	General Ledger	47	1,135	109	136
B 900 CQ2	On-Line Inquiry (includes MCS and ND L files)	16	380	36	46
B 900 CD2	On-Line Data Entry and Inquiry (includes MCS and ND L files)	36	865	83	104
B 900 CE2	Equipment Cost	41	990	95	119
B 900 CT8	Contractor BMS Module	314	7,525	721	903

Commercial Business Management System II (Distribution)

B 900 CRO	Accounts Receivable	78	1,880	180	226
B 900 CCO	Inventory Control	67	1,600	153	192
B 900 CMO	Inventory Management	67	1,600	153	192
B 900 CPO	Payroll	85	2,030	195	244
B 900 CGO	General Ledger	60	1,435	138	172
B 900 CYO	Accounts Payable	75	1,800	173	216
B 900 CTO	Order Processing Input and Display Terminal System—Order Entry, Invoicing, A/R, Inventory Control	791	18,990	1,820	2,279
B 900 CDO	Data Comm Module	34	810	78	97
B 900 CID	On-Line Invoicing	95	2,270	218	272

FINANCIAL

B 900 FGL	Financial General Ledger	68	1,620	155	194
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Bank Business Management Systems (Financial)

B 900 BO2	Bank Business Management System, Includes: Application Program Products for BK2, BD2, BC2, BS3, BL2, FG1	616	14,710	1,410	1,766
B 900 BD2	Demand Deposit Accounting (NOW)	145	3,410	327	410
B 900 BS2	Savings Deposit Accounting	79	1,890	181	227
B 900 BC2	Certificates of Deposit (Money Market)	100	2,390	229	289
B 900 BL2	Loan, Accounting	158	3,780	362	454
B 900 BK2	Audit Entry Proof	68	1,620	155	194
B 900 BQ2	Central Information System Inquiry Module	90	2,160	207	259
B 900 BU2	Central Information System Update Module	203	4,860	466	583
B 900 BP2	Central Information System Reporting Module	56	1,350	129	162
B 900 RDP	Remote Data Processing	47	1,135	109	136

Savings and Loan Systems (Financial)

B 900 TSL	CMS Thrift Time Deposit/Loans System	788	18,900	1,811	2,268
B 900 NOW	CMS Thrift NOW/Demand Deposit Subsystems (requires TSL)	158	3,780	362	454

Burroughs B 900 Series

SOFTWARE

		<u>Limited Time Plan</u>	<u>Unlimited Time Plan</u>		
			<u>Monthly Lic. Fee</u>	<u>Initial Charge</u>	
► Credit Union System (Financial)					
B 900 CUS	Credit Union System, Includes: CSL, CCL, CBP, CRP	293	7,020	673	842
B 900 CUI	Inquiry/File Maintenance	158	3,780	362	454
B 900 CUO	Update Module	225	5,400	518	648
B 900 CSL	CMS Credit Union Share/Loan	113	2,700	259	324
B 900 CCL	CMS Credit Union Club Module	68	1,620	155	194
B 900 CBP	CMS Credit Union Bill Payments	45	1,080	104	130
B 900 CRP	CMS Credit Union Extended Reporting Module	68	1,620	155	194
Hospital Business Management System (Medical)					
B 900 HAK	Hospital Payroll System	98	2,355	226	283
B 900 HAT	On-Line BHAS II	180	4,320	414	518
B 900 CGO	General Ledger	60	1,435	138	172
B 900 CYO	Accounts Payable	75	1,800	173	216
B 900 GPS	CMS Group Practice System	325	7,800	748	936
B 900 GEM	GEM Data Kit	36	855	82	103
B 900 APM	CMS Group Practice Appointments Module	67	1,620	156	194
CMS SCHOLASTIC II (Education)					
B 900 SCR	Student Records	146	3,500	335	420
Government					
B 900 SGP	Government/SCHOLASTIC II Payroll	89	2,135	205	256
B 900 GOU	On-Line Utility Billing	175	4,200	403	504
B 900 MO6	On-Line Budgetary System	163	3,900	374	468
B 900 GEM	GEM Data Kit	36	855	82	103
B 900 GOT	On-Line Tax Billing System (Requires district approval to market package)	169	4,050	388	486 ■