Burroughs B 920 MPS Central System

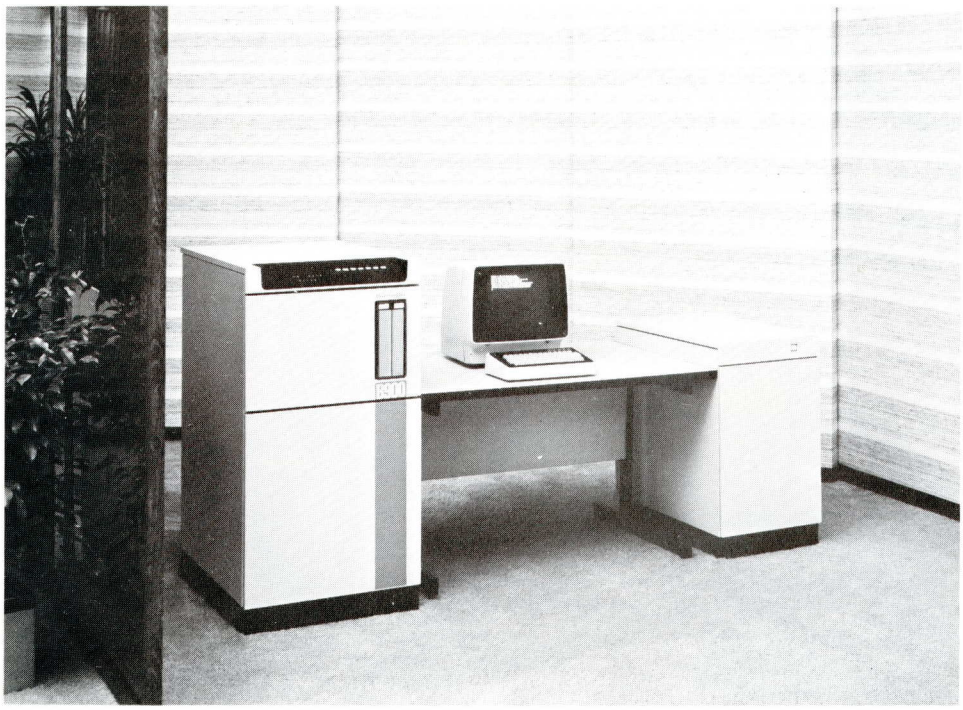
A Multiple Processor System With Multiple Innovations

The B 920 is the first multiple processor system in its size and price range. It offers the advantages of large system architecture in a small-scale computer for powerful and comprehensive information processing. A B 920 configuration may consist of up to eight 2 MHz processors – each so powerful that together they comprise a remarkably effective system. Highlights include:

□ Extraordinary ease of use – the B 920 manages itself, making it as simple to run as the smallest Burroughs system. The user gets top system performance and top operator performance; it leads to the best utilization of both the system and the staff's capabilities.

□ Fast implementation – because the B 920 is easy to operate, it is quickly integrated into the user's operations. Therefore, the user realizes a high return on his investment very soon after the B 920 is installed.

□ Each processor independently executes instructions from its own associated memory; additionally, each processor performs its share of the total processing environment in a multiprogramming mode. This combination forms a true multiprocessing capability for maximum throughput and new levels of system performance.



Among the significant hardware features of the B 920 are:

- Unique multiple processor architecture
- Up to eight high-speed, 2 MHz processors
- Up to 1.5 MB total memory
- Powerful data communications capabilities
- Processor redundancy
- Up to 240 MB of fixed disk storage
- Up to 390 MB of removable disk pack

Together with Burroughs Computer Management System, these hardware features provide an exceptionally versatile and powerful data processing system.

Operating System Processor

This 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 – which relieves other processors of such activities. The operating system processor's memory also provides data storage and data communications buffers as required for peripherals attached to the system. The operating system processor is called upon by the other processors as MCP services are needed and it, in turn, only addresses the other processors for the passage of control information as required.

The operating system processor also exercises direct control over the system's Time-Of-Day Clock, the Operator Display Terminal, and certain other peripherals. This processor is capable of utilizing up to 256 KB of memory.

Disk File Management Processor

The disk file management processor provides direct interface to the disk devices for file management. This processor/memory set contains and executes the physical disk access functions normally associated with the operating system.

Requests for information from disk are received from the MCP as demanded by user programs running on the system and are then executed by this processor. Disk data flows directly to/from buffer memory which is a part of the memory associated with the MCP processor. This arrangement provides optimum efficiency in the execution of user programs.

The disk processor's memory includes up to 64 KB for storage of its functions. ROM memory attached to this processor includes logic to automatically provide system load functions; it also includes the capability to automatically perform confidence tests each time the basic system load functions are performed. These tests are designed to assure that the basic hardware of the system is functioning properly prior to further system operation.

Master Control Program (MCP)
The B 920 MCP is a comprehensive operating system designed to simplify operation and control of the system. It increases productivity by automatically directing many functions which would ordinarily be handled by an operator or a programmer. Principal MCP features include:
□ Operator communication – the MCP provides for two-way communication between the operator and the system. MCP messages are simple, easy-to-understand statements.
□ Dynamic Multiprogramming – 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.
□ Virtual Memory – The B 920 MCP provides for a virtual memory system. This enables the B 920 to run programs which are larger than the available memory size. This same facility enables the MCP to maximize memory utilization in a multiprogramming/multiprocessing environment.
□ Dynamic Resource Allocation – The MCP maintains an inventory of the resources available on the system and maximizes productivity by allocating these resources to meet job requirements. Among these resources are:
Available processors
Available memory
Peripheral assignments
Disk storage space
Program priority assignments

Any additions in resources are recognized automatically by the MCP so that optimum system efficiency and throughput can be achieved. This capability makes possible the utilization of additional resources without reprogramming.

□ Input/Output Control – The MCP handles all physical I/O operations and also controls the operation of I/O devices. These activities include:
Shared files
Printer back-up
Index file handling
Locating files
Data transfer
Buffer management
Automatic label recognition
Error monitoring
Automatic retry on error detection

Because these functions are handled automatically by the MCP, program logic for these functions does not have to be included in user programs. This not only simplifies writing of application programs, but also reduces the size of the programs.

CMS On-Line REPORTER
CMS On-Line REPORTER provides a simple method of describing and obtaining repetitive or one-time reports. Report description may be entered through either the operator display terminal or from communication screens.

□ A questionnaire technique simplifies report description
□ Data to be reported may be selected based on:
Record type
Ranges of records
Conditions
Run time supplied data
□ Formatting, computed values, statistical and summary information may be specified in defining the report.
□ Eliminates the need for a business to have an in-house programmer to generate new reports as requirements dictate them.

CMS DOMAIN
CMS DOMAIN provides a method for quickly developing file maintenance and inquiry programs via attached display terminals. DOMAIN will perform the following activities:
□ Create a disk file
□ Add/delete/maintain disk records
□ Inquire into records in a disk file.

CMS CANDE
CMS CANDE (Command and Edit Program) provides a timely, effective means for interactive creation, maintenance and text editing of program source files for COBOL, MPL II and ARCS programming. This enables the user to maintain and create source files for program development and maintenance.

Task Processor
Each task processor is capable of multiprogramming to rapidly and efficiently execute user programs and user-oriented utilities. These processors are managed automatically by the MCP, thereby relieving the operator of this responsibility and ensuring the most effective use of each processor and its associated memory. For instance, when a job is ready to start, the MCP reviews and evaluates each processor's workload and assigns the job to the processor which is best able to handle it at that time. The assignment is accepted by that processor and the job is then added to those already running. The result: all resources are used to their greatest potential for optimal system performance.

Up to 256 KB of memory is available in each task processor. All user programs and user-oriented utilities are stored in this memory during their period of execution; also stored are the interpreters which perform the execution of user programs within each task processor.

The B 920's unique architecture uses the memory of the operating system for all buffers. This results in a very high rate of productivity, since the task processors and their memory sets are used exclusively for the execution of user programs and utilities.

Data Communications Processors
Two distinct data communications processors are available to provide direct interface to attached terminal work stations. These processors and associated memory set(s) contain and execute the network control logic generated by Burroughs exclusive Network Definition Language (NDL). This includes all information pertinent to management of the data communications processors and control of the network.

Multiple work stations can be situated locally and at remote sites for concurrent real time transaction processing. Up to four communications lines of varying types and speeds can be supported by a single data communications processor, with a total bandpass of 96,000 bits per second. The maximum line speed of 38,400 bits per second provides extremely fast local processing.

Each data communications line can be configured with the following characteristics:
- ☐ Asynchronous modem connect to 1,800 bps
- ☐ Asynchronous direct connect to 38,400 bps
- ☐ Synchronous/bisynchronous modem connect to 9,600 bps

Processor Redundancy
With the B 920, the user is virtually assured of having the continuous processing power needed to execute jobs, due to the optional feature of processor redundancy. This capability allows work to continue even if an individual processor becomes inoperable: the B 920 continues to function until that processor is restored to service.

For instance, if either the disk and/or operating system processors stop functioning, the B 920 can be restarted after activating the "back-up processor" switch on the cabinet. This allows the B 920 to run, using a reassigned task processor as the disk or operating system processor. If a task processor falters, its work will be allocated by the MCP, after the program is restarted, to an alternate task processor – even if that alternate is already being used for other jobs. With processor redundancy, the B 920's resources are reallocated to ensure completion of the workload.

Wide Range of Disk Subsystems
The B 920 can be configured with up to three disk subsystems, in addition to one removable disk device for system loader and one industry compatible mini disk.

Fixed Disk Devices:
□ 38 MB/55 ms average access time
□ 77 MB/55 ms average access time
□ 18 MB/55 ms average access time
□ 37 MB/55 ms average access time

Cartridge Devices:
□ 4.6 MB/145 ms average access time
□ 9.2 MB/100 ms average access time

Burroughs Super Mini Disk Devices:
□ 1 MB/266 ms average access time single drive inbuilt
□ 2 MB/266 ms average access time dual drive freestanding
□ 6 MB/157 ms average access time dual drive inbuilt

Industry Compatible Mini Disk:
□ 243 KB/343 ms average access time single drive freestanding

Disk Pack Devices:
□ 65 MB/33 ms average access time dual disk pack drive
□ 130 MB/33 ms average access time dual disk pack drive
□ 130 MB/33 ms average access time dual disk pack increment. The disk pack increment does not require a separate control. A maximum of two increments may be added to a 130 MB drive, giving a total of three dual disk pack drives per system.

Further Input/Output Capabilities
□ 40 KB/25 IPS/1600 BPI/9 channel phase-encoded magnetic tape unit
□ Operator Display Terminal
□ A variety of line printers are available, offering the user up to a maximum of two 650 LPM printers.

Burroughs Computer Management System (CMS)
Burroughs CMS is an integrated system of operating and application software; high level language compilers for application program development; and data communications, interpreters and utility programs. CMS is the key to the ability to expand B 920 systems throughout their range of configurations and to move to larger systems without reprogramming. CMS includes:
□ Master Control Program
□ CMS On-Line REPORTER
□ DOMAIN™ program products*
□ CANDE
□ ARCS
□ RPG-Edit
□ ODESY
□ On-Board High-Level Language Compilers (COBOL, RPG, NDL & MPL II)
□ Microprogrammed Interpreters
□ Business Management Systems
□ Utility programs
□ GEMCOS

*DOMAIN is a trademark of Burroughs Corporation

CMS ARCS
CMS ARCS (Automatic Run Control System) is a standard utility within the CMS which enables the automatic execution of sequences of commands and programs, particularly those that are repetitive in nature.

This feature allows a business to streamline their repetitive daily functions by significantly reducing the number of commands which must be entered by the system operator.

CMS RPG-EDIT
RPG-EDIT provides a timely, effective means for interactive creation, maintenance and text editing of program source files for RPG programming. This helps the user in creation and maintenance of his RPG source files.

CMS ODESY
CMS ODESY (On-Line Data Entry System) is designed for the user requiring a comprehensive data entry and verification system via attached display terminals.

Because of its audit facilities, ODESY is able to produce batches of error-free data for input to application packages, saving a great deal of program development effort by eliminating conventional input control programs.

High-Level Languages and Generative Aids
□ On-board COBOL compiler
□ On-board Report Program Generator (RPG) compiler
□ On-board Network Definition Language (NDL) compiler simplifies the implementation of data communications networks and allows for changes in the network to be made quickly and easily.
□ On-board Message Processing Language II (MPL II) compiler generates programs to process, edit, collect, verify, route and audit messages in a data communications network.
□ CMS Generalized Message Control System (GEMCOS) is a parameter-driven generator for the creation, implementation and maintenance of a Message Control System (MCS). An MCS manages the flow of messages between the network control program and application programs.

Microprogrammed Interpreters
Microprogrammed interpreters provide multiple virtual machines within a single task processor. This technique allows the B 920 to adapt to each high-level programming language (COBOL, RPG, etc.) and execute applications written in those languages in a very efficient manner.

Business Management Systems
Burroughs Library of Program Products includes Business Management Systems and specialized application program products. They permit newly-installed systems to become readily productive. Burroughs program products have been fully proven in thousands of customer installations and offer substantial savings compared with developing and maintaining your own programs.

Utility Programs
Sort, merge, file load, file dump and file copy are just a few of the many Burroughs Utility Programs which can assist the user in obtaining maximum productivity from the flexibility of the B 920 system.

Physical Characteristics
Height: 44″ – 111.76 cm.
Weight: 375 lbs./170 kg. (U.S.)
425 lbs./193 kg. (International)
Depth: 29″ – 73.7 cm.
Width: 23″ – 58.4 cm.

Electrical Specifications
Power Supply
(50/60 Hz)

Voltage	Amperage
100	17.0
110	15.5
115	15.0
120	14.0
127	13.5
200	8.5
208	8.0
220	7.5
230	7.5
240	7.0

Burroughs

Printed in USA 8-80 2016697