

Burroughs B 80-21/121 System



The B 80-21/121 System is pictured
with optional mini disk.

The B80-21 is a small but fully featured general purpose computer system. It combines the most advanced concepts of both hardware and system software into one system. Among the salient hardware features of the B80-21 are:

- A highly efficient main processor.
- SELF-SCAN® II System Display.
- A 60-character-per-second matrix printer.
- Burroughs super mini-disk subsystem.
- Burroughs cartridge disk subsystem.
- Burroughs fixed disk subsystem.
- Full data communications capability.

These features combined with Burroughs Computer Management System (CMS) and/or Burroughs Accounting Computer System (ACSYS) system software, provide a cost-effective approach to data processing requirements—today and in the future.

Processor

The B80-21 central processor features the most advanced design in Large Scale Integrated Circuitry (LSIC), including NANO memory, micro stack, I/O logic, and system registers. This design allows the processor to be packaged with minimum space requirements, yet offering the processing power of larger computer systems.

Major processor characteristics include:

- Clock speed of 1 MHz.
- Memory access time of 500 nano-seconds per 1 byte.
- "Look Ahead" and "Overlap" of the fetch and execute of microinstructions. These allow more than one function to occur during a processor cycle. The processor operates under control of microinstructions stored in memory. Portions of processor logic continuously fetch and decode microinstructions into control signals which cause processor functions. Buffers in the decode logic enable an overlapping of these functions. These allow more than one

function in a single processor cycle and contribute significantly to enhanced throughput.

- One microinstruction can have the capability of multiple character transfers. Data movement and processor efficiency are greatly enhanced by this feature.
- Through Hardware I/O interrupt, the processor takes only the time to service an I/O port when it is actually needed. This capability reduces processor overhead because scanning of the I/O ports is not needed.
- The B80-21 processor has up to eight I/O channels, each with its own unique address.
- Data movement occurs along an 8-bit wide data path.
- Main memory is Metallic Oxide Semiconductor (MOS) with a cycle time of one microsecond for one byte. The system has 4KB Read Only Memory (ROM) which contains:
 - Routines for loading interpreters from cassette or disk.
 - Basic customer confidence routines.
- 60KB read/write memory is basic, expandable up to 124KB in 16KB increments.

On-board diagnostics

- On-board diagnostics are designed to contribute to optimum performance of B80 systems. This series of Maintenance Test Routines (MTR) assists in analyzing faults in the system and detecting degraded performance of a component before a fault occurs. They perform tests on the entire system, including peripherals, with the results printed in simple, easy-to-read statements on a journal. These on-board diagnostics facilitate faster repairs and assist in reducing unscheduled maintenance.

Keyboard

The keyboard provides a proven concept in design for ease of use and productivity. The following keyboard features are standard:

- Keyboard buffering permits keyboard entry at an operator's pace even when the printer and processor are in use.
- Standard alphanumeric typewriter.
- Ten-key numeric data input keyboard.
- Four operation control key functions are duplicated on both the alphanumeric and ten-key keyboard for operator convenience.
- Programmatic indicator lights for operator guidance.
- Twenty-four Program Select keys to simplify operator use of the system.

Printer and Forms Handler

The inbuilt line printer and forms handler are designed for flexibility and throughput. Characteristics include:

- 60-character-per-second matrix printer.
- Printer positioning at 160 characters-per-second.
- 15-inch wide forms handler.

Disk Storage Subsystems

The B80-21 may be configured with a variety of disk storage devices. These include:

- Up to 4 million bytes of Burroughs super mini disk—or
- Up to 18.4 million bytes of Burroughs disk cartridge—or
- 18.8 million bytes of Burroughs fixed disk and one million bytes of inbuilt Burroughs super mini disk.

Also available on the B20-21 are configurations with the following disk drives.

Burroughs Cartridge Disk Subsystems

- 4.6 million bytes/145ms average access time.
 - 4.6 million bytes/80ms average access time.
 - 9.2 million bytes/100ms average access time.
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Burroughs Super Mini-Disk Subsystems

- 1 million bytes/266ms average access time single drive.
- 2 million bytes/266ms average access time dual drive.

A second inbuilt Burroughs super mini-disk may be added to the fixed disk configuration.

Input/Output Capabilities

- Industry-compatible Mini-Disk drive of 243 thousand bytes per single drive is optional.
- SELF-SCAN® II System Display.
- Line Printer (optional).
- Combination system printer and inbuilt line printer.
- Terminal systems (optional).

Data Communications Characteristics

- Data Communications Channels—up to two.
- Mode of Operation—half duplex.
- Interface—a choice of:
 - Asynchronous data set, BPS.
 - Synchronous data set, BPS.
 - Burroughs Data Link Control.
 - Two-wire Direct Connect up to 1,000 feet.
 - Burroughs Direct Interface (BDI) up to 15,000 feet.
- Buffers
 - Transmit Buffer(s).
 - Receive Buffer(s).

Burroughs Computer Management System (CMS)

Burroughs Computer Management System (CMS) is a totally integrated software system designed to provide identical procedures and results for Burroughs advanced interpretive computers. CMS includes:

- Master Control Program (MCP).
- Data Control System (DCS).
- CMS REPORTER.
- On-Board High-Level Language Compilers.
- Microprogrammed Interpreters.
- Business Management Systems.
- Utility Programs.

Master Control Program (MCP)

The B80 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 a two-way communication between the operator and the system. MCP messages are simple, easy-to-understand statements.
- Multiprogramming—More than one job may be executed concurrently. The MCP controls automatic multiprogramming by assuring efficient use of the processor on one job while I/O is occurring for other jobs.
- Virtual Memory—The B80 MCP provides for a complete virtual memory system. This enables the B80 to run programs which are larger than the available memory size. This same concept enables the MCP to maximize memory utilization in a multiprogramming 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:
 - Programs that are running and the segments of each program.
 - Memory availability.
 - Peripheral assignments and additions.
 - Disk storage space.
 - Program priority.

Any changes 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 hardware. These activities include:
 - 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, they do not have to be included in user programs. Therefore, application programs are simpler to write.

Data Control System (DCS)

Data Control System (DCS) is an application development aid designed to provide the following data handling capabilities:

- Interactive data entry.
- File creation.
- File maintenance.
- Inquiry.

CMS REPORTER

CMS REPORTER provides an interactive method of specifying repetitive or one-time reports.

- A questionnaire technique simplifies report definition.
- 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.

High-Level Languages and Compilers

- Network Definition Language (NDL) compiler simplifies the implementation of data communications networks.
 - Message Processing Language II (MPL II) compiler generates programs to process, edit, collect, verify, route and audit messages.
 - On-board COBOL compiler.
 - On-board Report Program Generator (RPG) compiler.
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Microprogrammed Interpreters

Microprogrammed interpreters provide multiple virtual machines within a single host system. This open-end design concept means that other languages may be implemented efficiently on the B 80 as new interpreters are developed. It also means that the user is protected against obsolescence because improvements in throughput can be realized without changing hardware.

Business Management Systems

Burroughs Library of Program Products includes Business Management Systems and specialized application program products. They permit newly installed systems to become productive almost immediately. Burroughs program products have been fully proven in thousands of customer installations. They 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 that can assist the user in obtaining greater system flexibility at an effective cost-to-result ratio.

Burroughs Accounting Computer System (ACSYS)

One of the many features of the Burroughs Accounting Computer System Software is to permit the use of existing Series L/TC magnetic tape cassette programs on B 80 disk systems, utilizing the disk to emulate cassettes. Series L/TC magnetic tape cassette programs may be executed without program modification on the B 80 System, providing enhanced throughput not previously possible with cassette programs.

ACSYS Software supports the following disk subsystems:

- Burroughs Super Mini-Disk.
- Burroughs Cartridge Disk.



Physical Characteristics

Height: 30.00"—76.2cm
 Weight: 418 pounds—218.6 kg
 Depth: 29.00"—73.66cm
 Width: 49.70"—126.24cm

Electrical Specifications

United States Electrical Specifications
 (60 Hz)

100 volts—16.2 amps
 110 volts—14.8 amps
 115 volts—14.1 amps
 120 volts—13.5 amps
 127 volts—12.8 amps

International Electrical Specifications
 (50/60 Hz)

100 volts—16.2 amps
 110 volts—14.8 amps
 115 volts—14.1 amps
 120 volts—13.5 amps
 127 volts—12.8 amps
 200 volts— 8.1 amps
 208 volts— 7.7 amps
 220 volts— 7.4 amps
 230 volts— 7.0 amps
 240 volts— 6.7 amps