

AT&T 3B2/600G COMPUTER



STANDARD MULTIUSER SMALL COMPUTER REQUIREMENTS CONTRACT

Introduction

The AT&T 3B2/600G computer is the primary building block of the Standard Multiuser Small Computer Requirements Contract (SMSCRC) system. It is driven by the UNIX[®] System V Operating System and an array of user-friendly software.

A single computer can support programming, applications, and office automation needs simultaneously. The 3B2/600G can function as a powerful server in a variety of networks so that users can share files, data, and printers for faster communication and improved performance. It can also interact with government-owned mainframes without the need for redundant hardware/terminal emulation.

The 3B2/600G offers flexibility, cost effectiveness, and growth potential. It is reliable and easy to install, use, and maintain.

This catalog provides a concise description of the 3B2/600G computer and its associated equipment, as listed below.

- The basic 3B2/600G cabinet and its contents
- Required system and memory boards and optional boards that mount inside the basic cabinet
- Tape and hard-disk storage devices that mount both inside and outside the basic cabinet
- The console for system administration
- Optional 19-inch unshielded and TEMPEST-certified cabinets for housing the computer.

Each equipment item, where applicable, is identified by its Subcontract Line Item Number (SLIN).

Each equipment description contains a brief general introduction and some or all of the following information:

- Application - Principal use of the device
- Features - Important design/performance characteristics and capabilities
- Specifications - Dimensions, environmental limitations, and power requirements
- Items included - Additional parts and accessories supplied with the main unit
- Requirements - Other conditions, items, and facilities required for normal operation
- Options - A list of optional equipment that can be used with the unit

For additional information or ordering assistance, call our toll-free number:
1-800-DIAL-251.

Basic 3B2/600G Cabinet

The basic 3B2/600G cabinet provides the housing, wiring, connectors, and utilities for all the components necessary for an operational 3B2/600G computer. It must be equipped with hardware and software listed under Requirements and Options for full service capability. The TEMPEST version must be ordered for use in the TEMPEST-certified 19-inch cabinet (SLIN 0001FC).

Application

- Each SMSCRC system

Features

- Compact physical design, aluminum construction, and attractive, unobtrusive appearance
- Hinged front cover with key lock for access to power switch, floppy disk drive, and cartridge tape drive
- Equipped with the following parts and components:
 - Power supply
 - Fans and air filter
 - 720 Kb, 5 1/4-inch floppy disk drive
 - 125 Mb cartridge tape drive for loading, backup, and restore functions
 - Spaces for up to three hard disk drives (ordered separately); used only in non-TEMPEST configurations
 - Power on/standby switch on front panel
 - Power and diagnostics indicators on front panel
 - System reset switch behind front panel
 - Backplane and card cage; access from rear of cabinet
 - Small Computer System Interface (SCSI) host adapter board installed in I/O slot 01 of card cage
- Slots in card cage for the following units (ordered separately):
 - System board
 - Memory boards
 - Multiprocessor enhancement (MPE) feature board
 - Data communications, port, and interface boards
 - Second SCSI host adapter board

SLIN 0001AA TEMPEST: SLIN 0001FA

- Interface with immediate access storage (IAS) hard disks and tape storage units by way of the SCSI host adapter board and the industry standard SCSI bus
- Maximum disk storage capacity:
 - Non-TEMPEST: 981 Mb internal, 6 Gb external
 - TEMPEST: 0 internal, 3.6 Gb external
- Variety of mounting options:
 - Table top
 - 3B2 expansion cabinet (SLIN 0001DB)
 - TEMPEST cabinet (SLIN 0001FC)
 - Commercial 19-inch cabinet that meets mounting requirements of equipment

Specifications

- 16.9 inches wide x 12.6 inches high x 24.5 inches deep
- 65 to 82 pounds, depending on the components included
- 40 to 100F operating temperature range
- 10F change per 10 minutes or 20F change per hour thermal shock tolerance
- 20% to 80% noncondensing relative humidity
- -250 to 10,000 feet altitude range
- 50 dB(A), or less, acoustic noise
- 120V-60 Hz, 15 amps or 240V-50 Hz, 8 amps nominal input
- Less than 1300 watts power consumption
- +5V, +12V, -12V, and circuit ground outputs
- 3.6V, long-life lithium battery for clock
- 82 pound load tolerance on top of cabinet
- 3000 BTUs/hour heat dissipation
- Compliance of Electromagnetic Interference (EMI) with FCC and VDE Class A requirements in Non-TEMPEST environment and NACSIM 5100A requirements in TEMPEST cabinet environment

Items Included

- SCSI host adapter board installed in I/O slot 01 of the card cage
- Ten blank tape cartridges
- Complete set of documentation



Requirements

- System console (SLIN 0003AA or AB)
- System board (SLIN 0001BC or BE)
- Memory board (SLIN 0002AC or AE)
- Nonremovable hard disk unit (SLIN 0005BA or EA) (non-TEMPEST configuration only) (In a TEMPEST configuration, all hard disk units are removable and mounted external to the basic 3B2/600G cabinet.)
- UNIX operating system (SLIN 0012AA)

Options

- Up to three additional memory boards
- Up to two additional nonremovable hard disk units (non-TEMPEST only)
- Up to two MPE boards (SLIN 0001CA or CC)
- Combination of up to 11 data communications, port, and interface boards in I/O slots:
 - DDN X.25 port 56 Kb/MIL-STD-188-114 boards (SLIN 0004DA)
 - DDN X.25 port RS-232C boards (SLIN 0004DC) (non-TEMPEST only)
 - DDN X.25 port 56 Kb/CCITT V.35 boards (SLIN 0004DE) (non-TEMPEST only)
 - LAN interface boards (SLIN 0004EA)
 - IBM 3270/3274 emulation boards (SLIN 0004EM)
 - Up to 11 EPORTS RS-232C 8-port boards (SLIN 0004AA) (non-TEMPEST only)
 - Up to five fiber expansion module (FXM) RS-232C interface boards (SLIN 0004AC)
 - One additional SCSI host adapter board (SLIN 0001EA)
- Rack-mount hardware kit (SLIN 0001DA) for installation in a 19-inch equipment cabinet

System Board

The system board provides central processing and control. It plugs into the double slot in the middle of the card cage.

Application

- Each 3B2/600G computer (Only the 22 MHz board can be used in a TEMPEST configuration.)

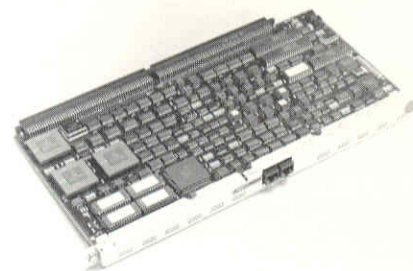
Features

- Three main functional areas
 - Central processing unit (CPU)
 - Memory management unit (MMU), which controls information movement to and from memory
 - Math acceleration unit (MAU), which speeds up floating-point calculations
- Two clock speeds available: 22 MHz and 24 MHz
- Very large scale integration (VLSI) devices
- Data paths
 - Internal: 32 bits
 - External: 32-bit address, 32-bit data

22 MHz: SLIN 0001BC

24 MHz: SLIN 0001BE

- Operations: 8, 16, 32 bits
- Instruction set: IS-25
- CPU instruction cache: 64 by 32 bits
- Fetch controller: 8-byte instruction queue, 32-bit-wide address arithmetic unit (AAU)
- Encoded CPU status outputs: 4
- Dedicated registers (all user accessible)
 - Seven-frame pointer
 - Argument pointer
 - Process status word
 - Stack pointer
 - Process control pointer
 - Interrupt stack pointer
 - Program counter
- Interrupt levels: 15
- Context switching: stack oriented
- Execution privileges: kernel, executive, supervisor, user levels
- Virtual address space: 4 Gb
- Physical address space: 4 Gb
- Memory management: demand paging



- Two RJ45 modular jacks on back plate for RS-232C interface connection with the system console and a peripheral device such as a printer

Specifications

- 15 inches wide x 7.4 inches deep

Requirements

- At least one, or as many as four, memory boards

Options

- Up to two MHz multiprocessor enhancement feature (MPE) boards to increase the system board performance: 18 MHz board with 22 MHz system board; 24 MHz board with 24 MHz system board

Multiprocessor Enhancement Feature Board

The optional multiprocessor enhancement (MPE) feature consists of a circuit board and associated software. It provides improvements in system performance. The system board can use up to two MPE feature boards as secondary processing units.

Application

- Any 3B2/600G computer that requires performance beyond the capability of the basic system board

Features

- Three main functional areas
 - Central Processing Unit (CPU)
 - Memory Management Unit (MMU)
 - Math Acceleration Unit (MAU)

18 MHz: SLIN 0001CA

24 MHz: SLIN 0001CC

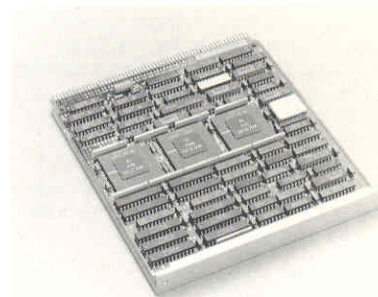
- Two clock speeds available: 18 and 24 MHz
- Virtual address cache
 - 4 Kb of memory for instructions
 - 2 Kb of memory for data

Specifications

- 6.5 inches wide x 7.4 inches deep
- Maximum 15 watts power consumption at 5 volts

Items Included

- Feature Manual
- Federal Systems Supplement to feature manual



Requirements

- 18 MHz MPE board(s) with 22 MHz system board; mounted in BUB00 and BUB01 slots
- 24 MHz MPE board(s) with 24 MHz system board; mounted in PBUS 0 and PBUS 1 slots

Small Computer System Interface (SCSI) Host Adapter Board

SLIN 0001EA

The SCSI board provides interface between the 3B2 system bus and the SCSI bus, which accesses immediate access storage (IAS) devices. One SCSI board is standard with the 3B2/600G, included with SLIN 0001AA and installed in the card cage. A second SCSI board can be ordered separately for additional storage device interface.

Application

- Each 3B2/600G computer

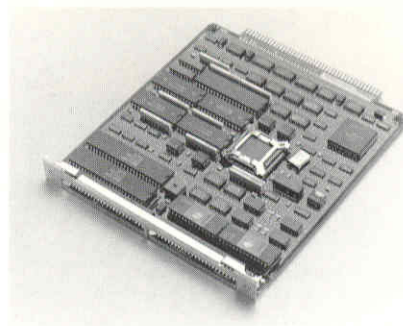
Features

- Uses one tap on the SCSI bus
- Supports up to seven SCSI peripheral storage devices including the cartridge tape drive (standard card only), hard disk units, and the 9-track tape unit

- SCSI bus connects to storage devices through IAS controllers embedded in each device
- SCSI address switch
- 128 Kb of dynamic RAM (DRAM)
- 32K of erasable programmable ROM (EPROM)
- External direct memory access (DMA)/First In-First Out (FIFO) unit between SCSI and 3B2 I/O bus

Specifications

- 6.5 inches wide x 7.4 inches deep
- 10 watts power consumption



Requirements

- For second SCSI: an empty I/O slot in card cage
- SCSI host adapter cable (SLIN 0005RA) for connection from card to first external storage device
- Terminating resistor (part of SLIN 0005RA) to terminate the SCSI bus at the last external storage device
- SCSI daisy-chain cables (SLIN 0005RC) for connections between all external storage devices

Memory Board

4 Mb: SLIN 0002AC 16 Mb: SLIN 0002AE

Up to four memory boards, mounted in card cage slots, provide RAM for the 3B2/600G computer. Memory boards are supplied in modular form so that failure in one module will not deprive the computer of the remaining memory. Failure in the board containing the operating system will "panic" the system, and data will be saved on disks. Memory boards can be installed in the field by either Government or contractor personnel in less than one hour.

Application

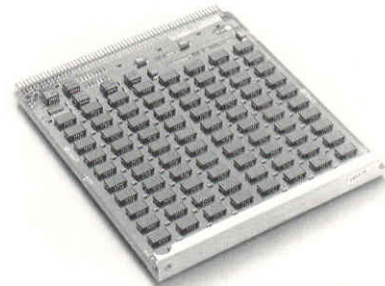
- Each 3B2/600G computer

Features

- Available in 4 Mb and 16 Mb sizes
- Surface-mount technology, double-sided
- 4 Mb board uses 256 Kb DRAM chips; 16 Mb board uses 1 Mb DRAM chips
- 32-bit words
- Single- and double-bit error detection and single-bit error correction
- 128 Kb of ROM
- 16 kbps battery backup nonvolatile RAM

Specifications

- 6.5 inches wide x 7.4 inches deep
- 10 watts power consumption



Requirements

- Must be mounted in MEM 0, 1, 2, and 3 slots
- Maximum 64 Mb of memory

System Console

The 3B2/600G system console is an AT&T 605G (Non-TEMPEST) or 605GT (TEMPEST) business communications terminal. This high-quality keyboard/video display unit is a required peripheral used for administration of the 3B2/600G computer. The TEMPEST console is functionally identical to its non-TEMPEST counterpart, but is slightly larger because of its shielding capability.

Application

- Each 3B2/600G computer

Features

- Asynchronous transmission
- Tilt and swivel monitor
- Detached, low-profile keyboard with 102 keys and 7-foot coiled cord
- Terminal self-test
- Speeds selectable from 300 to 38,400 bps
- Plain English options menu
- Nonvolatile storage for options, screen labels, and strings
- Reverse video screen
- 80 or 132 characters per line
- 27 lines per screen: 24 data, 1 status, and 2 screen label

SLIN 0003AA TEMPEST: SLIN 0003AB

- Standard RS-232C port for connection to 3B2/600G computer, plus auxiliary RS-232C printer port interface
- Operation modes: interactive, setup, and self-test
- Green phosphor screen

Specifications

- Monitor size:
 - Non-TEMPEST: 12.9 inches wide x 13.3 inches high x 12.8 inches deep
 - TEMPEST: 14.2 inches wide x 14.5 inches high x 15.2 inches deep
- Keyboard size: 18.75 inches wide x 1.5 inches high (2.1 inches tilted) x 7.8 inches deep
- 14-inch (diagonal) viewing screen
- Non-TEMPEST: 22 pounds; TEMPEST: 35 pounds
- 44° to 104°F operating temperature
- 120V-60 Hz, 240V-50 Hz nominal input, switch selectable

Items Included

- Power cable
- User's Guide
- ODS-108 asynchronous filter, RS-232C (TEMPEST only)



Requirements

Non-TEMPEST

- RS-232C cable for connection to 3B2/600G computer: 25-foot RJ45 to DB25 male (SLIN 0010DG) or 50-foot RJ45 to DB25 male (SLIN 0010EG)

TEMPEST

- Cable for connection to coupler on back of TEMPEST cabinet: 15-foot preassembled fiber optic cable (SLIN 0004AP) or fiber optic cable ordered by the foot (SLIN 0010JE) and a set of fiber optic cable terminators (SLIN 0010JG)

Hard Disk Drive Units for Immediate Access Storage

Immediate access storage (IAS) is an SMSCRC high-speed, expandable data storage feature using 5 1/4-inch hard disk units with embedded SCSI controllers. They are available in medium (155 Mb) and large (327 and 608 Mb) capacities.

Up to three 155 or 327 Mb units can be installed internal to the 3B2/600G computer cabinet. In addition, as many as ten (nine, if a 9-track tape drive is used) can be installed external to the 3B2/600G cabinet.

All internal units are nonremovable. They remain in place permanently or until service is required. External units are subdivided into removable and non-removable. Removable units can be readily pulled from their enclosures for secure storage or transport to another machine.

All external disk units must be housed in Control Data Corporation (CDC) Commercial Advanced Disk System (CADS) enclosures, also referred to as hard disk cabinets, each of which can hold two units.

In a TEMPEST configuration, all hard disk units must be external, removable, and mounted inside the 19-inch TEMPEST cabinet, SLIN 0001FC.

Application

- Each 3B2/600G computer

Features

- Maximum storage capacity of 7 Gb for one 3B2/600G computer.
- Average seek time of 16.5 milliseconds.
- 512-byte sectors.
- 32-byte data buffer in SCSI controller.
- Removable units certified for 10,000 insertions/removals.
- No tools required for removal of removable units.
- Failure of one disk unit not disabling to any other units.
- UNIX operating system logs failures, reports them to system console, and flags the failed drive as out of service.
- Sealed, ultraclean head/disk/actuator chamber.
- No need for adjustments or preventive maintenance.

Specifications

- Approximately 8 pounds
- 5.75 inches wide x 3.5 inches high x 8 inches (internal) or 10.5 inches (external) deep
- Less than 45 dB(A) acoustic noise

Requirements

- One or more CADS enclosures for external hard disk units. Each enclosure can hold one or two units. The SLIN 0005PA stand-alone enclosure is required for non-cabinet applications.

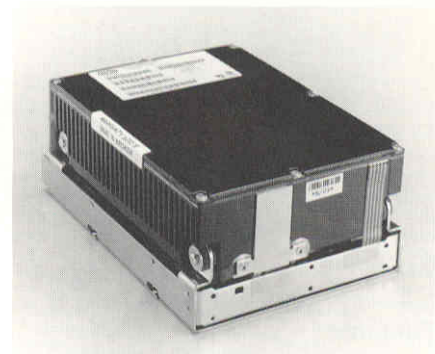
SLIN 0005AA– SLIN 0005JA

155 Mb: SLIN 0005EA

300 Mb: SLIN 0005BA

Internal/Nonremovable

These are the only hard disk units that can be installed inside the 3B2/600G cabinet. The medium capacity disk (SLIN 0005EA) is a Wren™ III model. The large capacity disk (SLIN 0005BA) is a Wren IV with an actual formatted storage space of 327 Mb.



155 Mb: SLIN 0005EC

300 Mb: SLIN 0005BC

External/Nonremovable

These units are designed for permanent installation in CADS enclosures (SLIN 0005PA or QA). The medium capacity disk (SLIN 0005EC) is a 155 Mb Wren III model. The large capacity disk (SLIN 0005BC) is a Wren IV with an actual formatted storage space of 327 Mb. (An acceptable alternative to an external non-removable unit is a removable unit of the desired capacity.)



155 Mb: SLIN 0005AB

155 Mb (TEMPEST): SLIN 0005JA

300 Mb: SLIN 0005AA

550 Mb (TEMPEST): SLIN 0005HA

External/Removable

These units are designed for insertion in CADS enclosures. They are Wren models housed in cases with handles and designated as removable transportable memory modules (RTMMs). The medium capacity units (SLINs 0005AB and JA) are CDC RTMM-155s (Wren III). TEMPEST and non-TEMPEST models are completely interchangeable. The large capacity SLINs 0005AA and HA are CDC RTMM-300 (Wren IV) and RTMM-550 (Wren V) models, respectively; their actual formatted capacities are 327 Mb and 608 Mb. The TEMPEST model can be used in non-TEMPEST configurations.



The SLIN 0005QA rack-mount enclosure is required for all installations in 19-inch cabinets.

- A second SCSI host adapter board in the 3B2/600G cabinet card cage if the number of SCSI units exceeds the capacity of the standard SCSI board (six hard disk units or five hard disk units and a 9-track tape unit).
- One SCSI host adapter cable (SLIN 0005RA) to connect the 3B2/600G cabinet to the first external unit on the SCSI bus.

- One SCSI daisy-chain cable (SLIN 0005RC) from each external unit on the SCSI bus to the next unit.
- One termination resistor (part of SLIN 0005RA) to terminate the SCSI bus at the last external unit. (If a 9-track tape drive is connected to the SCSI bus, it should be the last unit.)

CADS Enclosure (Hard Disk Cabinet)

The Commercial Advanced Disk System (CADS) enclosure is manufactured by Control Data Corporation to house its RTMM hard disk units. It can also be used for external nonremovable hard disk units.

Application

- SMSCRC systems with hard disk units mounted external to the basic 3B2/600G computer cabinet

Features

- Capacity for one or two hard disk units
- SCSI connections, power, and cooling

Stand-Alone:
SLIN 0005PA
Rack-Mount:
SLIN 0005QA

Specifications

- 16.8 inches wide x 5.1 inches high x 22 inches deep
- Approximately 27 pounds (without disk units)
- 50° to 105° operating temperature
- 8% to 80% noncondensing relative humidity
- 115V-60 Hz or 230V-50 Hz nominal input, switchable
- 88 watts power consumption with two disk units
- 45 dB(A) acoustic noise with two disk units
- 300 BTUs/hour heat dissipation with two disk units



Requirements

- Stand-alone model for table-top use
- Rack-mount model for mounting in a 19-inch cabinet (such as SLIN 0001DB 3B2 expansion cabinet or SLIN 0001FC TEMPEST cabinet)

Nine-Track Magnetic Tape Unit

The optional 9-track tape unit is a model HP88780A manufactured by Hewlett-Packard Corporation. It is an autoloading, horizontally mounted, 1/2-inch, reel-to-reel machine that provides high-speed backup and restore capabilities to the 3B2/600G computer. The tape unit, like the hard disk units, operates off the SCSI bus.

Application

- Any 3B2/600G computer that requires a high-speed, high-capacity tape facility in addition to the standard cartridge tape unit

Features

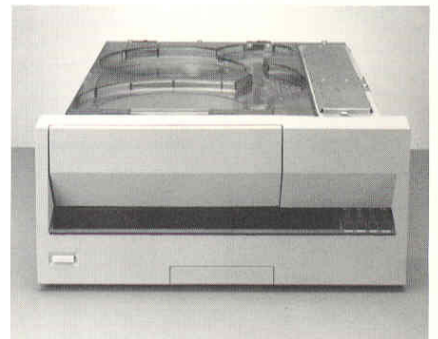
- Read/write speed of 125 inches per second (ips)
- Rewind speed of 320 ips (rewinds a 2400-foot reel in 90 seconds)
- Handles both 6250 characters-per-inch (cpi) group-coded recording and 1600 cpi phase-encoded ANSI formats
- 512 Kb internal buffer
- Error detection and correction

Stand-Alone:
SLIN 0006AA
Rack-Mount:
SLIN 0006AC

- Autoload feature centers any standard size reel from 6 to 10.5 inches, locks the reel, and threads the tape
- Autoload success rate of 98%
- No field adjustments or periodic maintenance other than cleaning tape path and head
- Board-level diagnostics
- Control panel with operation keys, status indicators, and error message display

Specifications

- 19 inches wide x 8.75 inches high x 26.5 inches deep
- 85 pounds
- 59° to 90° F operating temperature
- 20% to 80% noncondensing relative humidity
- 120V-60 Hz or 240V-50 Hz nominal input, switchable
- 250 watts maximum power consumption
- 54 dB(A) maximum acoustic noise



Items Included

- Ten blank tapes
- User's Guide

Requirements

- Cable and terminating resistor (see section on SCSI Host Adapter Board)
- SLIN 0001DC, which includes slides and brackets for converting a SLIN 0006AA stand-alone tape unit to a rack-mount unit equivalent to SLIN 0006AC; required only when mounting an existing SLIN 0006AA in a 19-inch equipment cabinet
- Last unit on SCSI bus (after hard disk units)
- Rack-mount unit (SLIN 0006AC) in TEMPEST configuration

3B2 Expansion Cabinet

This AT&T 19-inch industry standard cabinet is a compact, protective, and attractive housing for certain components of SMSCRC equipment.

Application

- Installations where cabinet enclosure of one or two 3B2/600G computers and associated hard disk and magnetic tape equipment is desirable for space-saving, accessibility, and aesthetic reasons.

Features

- Steel construction
- Off-white color
- Removable front and rear doors with air vents
- Casters on all four corners
- Retractable anti-tip leg on front of cabinet
- Slide mounting available separately for 3B2/600G and 9-track tape unit
- Cooling and air circulation provided by the equipment mounted in the cabinet

SLIN 0001DB

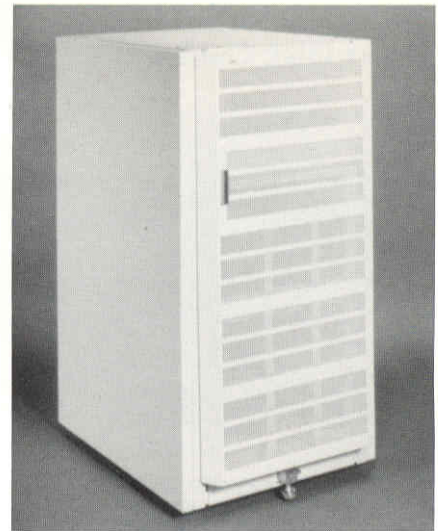
- Standard mounting arrangement: 3B2/600G computer at the bottom, hard disk cabinet(s) in the middle, and 9-track tape unit at the top
- Easy accessibility for maintenance
- Cable entry through lower rear
- Filler panels for covering unused spaces

Specifications

- 24.75 inches wide x 48.5 inches high x 33 inches deep
- 42 inches of vertical mounting space
- Mounting height expressed in units of 1.75 inches each, for a total of 24 units. Equipment unit requirements:
 - 3B2/600G computer, 9 units
 - Tape unit, 5 units
 - Hard disk cabinet, 3 units
 - Filler panel, 1 unit
- Approximately 220 pounds (empty)

Requirements

- Mounting hardware kit (SLIN 0001DA) for 3B2/600G computer
- Filler panels (SLIN 0001DD) for all unused spaces to maintain constant flow of cooling air



- For hard disk units installed external to the 3B2/600G: rack-mount hard disk cabinets (SLIN 0005QA)
- For 9-track tape unit: rack-mount unit (SLIN 0006AC) or existing stand-alone unit (SLIN 0006AA) equipped with a rack-mount kit (SLIN 0001DC)

TEMPEST Expansion Cabinet

This 19-inch cabinet provides a compact, attractive, TEMPEST-certified, shielded housing for certain SMSCRC equipment.

Application

- Installations where electronic shielding of a 3B2/600G computer, up to three hard disk cabinets (CADS enclosures), a 9-track tape unit, and up to three FXMs is desirable for security reasons

Features

- Full TEMPEST shielding
- Fiber optic connections to external equipment
- Front and rear doors
- Mounting facilities for FXMs on inner side of rear door
- 120V-60 Hz or 240V-50 Hz power filter with six outlets and shielded 6-foot power cord
- Cooling fans
- Casters on all four corners

SLIN 0001FC

- Standard mounting arrangement: 3B2/600G computer on the bottom, hard disk cabinets in the middle, and 9-track tape units at the top; FXMs on inner side of rear door

Specifications

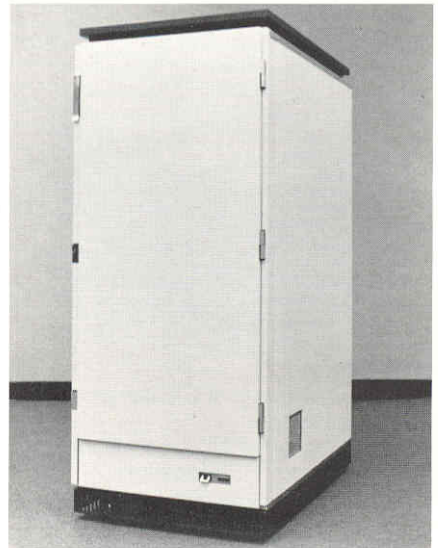
- 24 inches wide x 52 inches high x 36 inches deep
- Approximately 200 pounds (empty)

Items Included

- 16 SMA couplers
- RS-232C cable
- RJ45 to DB25M adapter
- ODS-107 asynchronous filter, RS-232C
- 3-foot fiber optic cable

Requirements

- Mounting hardware kit (SLIN 0001DA) for 3B2/600G computer
- For hard disk units installed external to the 3B2/600G: rack-mount hard disk cabinets (SLIN 0005QA)



- For 9-track tape unit: rack-mount unit (SLIN 0006AC) or existing stand-alone unit (SLIN 0006AA) equipped with a rack-mount kit (SLIN 0001DC)

Trademarks

UNIX is a registered trademark of AT&T.

Wren is a trademark of Control Data Corporation.



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