

"COMM-STOR*" II COMMUNICATIONS STORAGE UNIT
EQUIPPED WITH 8A1/8B1 PROTOCOL OPTION
DESCRIPTION AND OPERATION

1. GENERAL

1.01 This section covers the COMM-STOR II Communications Storage Unit equipped with 8A1/8B1 protocol option manufactured by Sykes Datatronics, Incorporated, as described in their section SYKS 578-400-101.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 Information covering the description and operation of the COMM-STOR II Communications Storage Unit equipped with 8A1/8B1 protocol option is contained in the attached reprint of the practice prepared by Sykes Datatronics, Incorporated.

1.04 The COMM-STOR II Communications Storage Unit performs the following functions:

(a) *Local:* Message entry, storage, retrieval, and editing

(b) *Private Line:* Store and forward message communications.

1.05 The COMM-STOR II unit consists of a microprocessor-based controller and one or two floppy-disk drives that store up to 256,000 characters on a single-sided, standard density, soft-sectored diskette. The COMM-STOR II unit is positioned between the data set and the terminal in a station arrangement. A printer may also optionally be connected to the COMM-STOR II unit.

1.06 The interfacing requirements of the COMM-STOR II unit conform with EIA RS-232C.

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**Comm-Stor II COMMUNICATIONS
STORAGE UNIT
DESCRIPTION AND OPERATION
OF THE 8A1/8B1 OPTION**

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1. GENERAL

1.01 This section discusses the description and operation of the Comm-Stor® II Communications Storage Unit equipped with the 8A1/8B1 protocol option, hereafter referred to as the Comm-Stor II unit. The units performs the following functions:

Local: message entry, storage, retrieval and editing.

Private Line: store and forward message communications.

1.02 Whenever this section is reissued, the reason(s) for the reissue will be listed in this paragraph.

1.03 The Comm-Stor II unit provides full ASR (automatic sending and receiving) capabilities to DATASPEED 40/1, 40/2, 43 Teleprinters, and other asynchronous terminals with Electronic Industries Association (EIA) interfaces. The Comm-Stor II unit consists of a



Fig. 1—Front View of the Comm-Stor II Unit

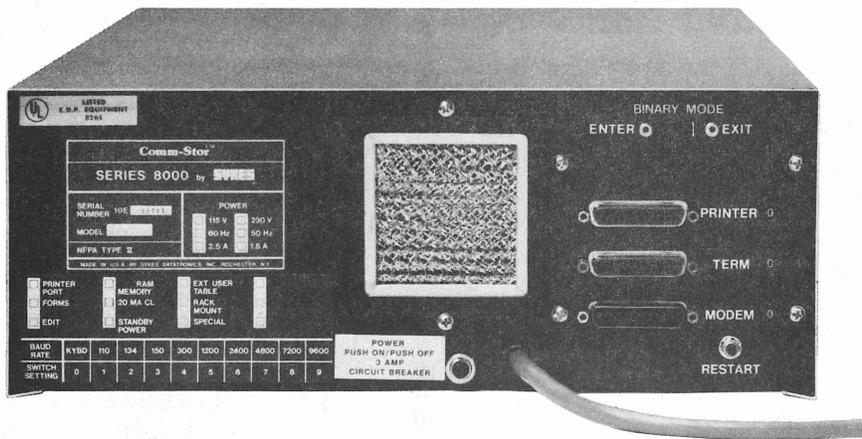


Fig. 2—Rear View of the Comm-Stor II Unit

microprocessor based controller and one or two flexible diskette drives (floppy disks) that are each able to store up to 256,000 characters on a single-sided, standard density, soft sector diskette. In a station arrangement, the Comm-Stor II unit is positioned between the data set and the terminal, and, optionally, the printer.

1.04 The interfacing requirements of the Comm-Stor II unit conform with EIA RS-232C.

2. DESCRIPTION

2.01 The Comm-Stor II unit is available in two models: Model 8120A (Single Drive) and Model 8220A (Dual Drive). Options include:

Printer Port

Standard Forms/Extended Forms Operation

Rack Mount Cabinet

RAM Memory Expansion

A label on the back of each unit indicates those options that are included in the unit.

2.02 The front panel of the Comm-Stor II unit has several indicators to assist the operator. Two of the indicators, READY and BUSY, are duplicated in a dual drive unit to provide information about each drive. The function of each indicator (Figure 1) is as follows:

FRONT PANEL INDICATORS

RESTART: A switch/indicator to show when the unit is turned on. It also recycles the system when necessary during operations.

READY: An indicator which signifies that a diskette has been properly inserted in the drive.

BUSY: An indicator which signifies that data is being transferred to or from the diskette. A diskette should not be removed when the BUSY indicator is illuminated. To interrupt an operation, a RESET command should be entered. The operator should wait until the BUSY lamp goes out before removing the diskette.

CARRIER: Indicates that the station is connected to the network controller.

STATUS: This indicator has a dual purpose. First, it indicates that the network controller is communicating with the station (the lamp flickers), and that messages are being sent or received by the station (the lamp remains ON).

Second, it indicates the presence of a parity error *at the terminal*. The lamp normally flickers when data is being transferred to or from *any* port. If a parity error occurs and data is not being transferred through the terminal ports, it will illuminate at full brilliance. When a parity error occurs and data is being transferred through a port, the lamp will illuminate at half brilliance, but will return to full brilliance after completion of the data transfer. After a parity error, the lamp is turned off by typing a RESET command.

PERIPHERAL DEVICE CONNECTIONS

2.03 A terminal, printer, and data set may be connected to the Comm-Stor II unit through industry standard ports on the rear of the unit (Figure 2). No special wiring of the cables is necessary.

2.04 The cable from the terminal is connected to the port labeled TERM. This cable should have a male plug in accordance with industry standard procedures. If the user has the printer port option, the cable from the printer is connected to the port labeled PRINTER. This cable should have a male plug in accordance with industry standard procedures. If the printer port is installed but not presently in use, the connector may be left unterminated. The cable from the modem is connected to the port labeled MODEM. This cable should have a female plug in accordance with industry standard procedures.

INTERNAL HARDWARE

The Comm-Stor II Unit Controller

2.05 The Comm-Stor II controller (Figure 3) is designed around a microprocessor with all operating software contained in ROM (Read Only Memory). In addition to the ROM memory, four other subsystems are directly accessed by the microprocessor during normal operation: RAM memory, configuration memory, diskettes, and the communications interfaces.

RAM (Random Accessory Memory)—RAM memory provides temporary storage of data received through the ports, and storage locations for internal information required by the microprocessor. The Comm-Stor II unit, equipped with the 8A1/8B1 option, contains 8K of RAM, none of which is accessible to the user. The 8A1/8B1 System diskette is used to assign RAM memory for buffering.

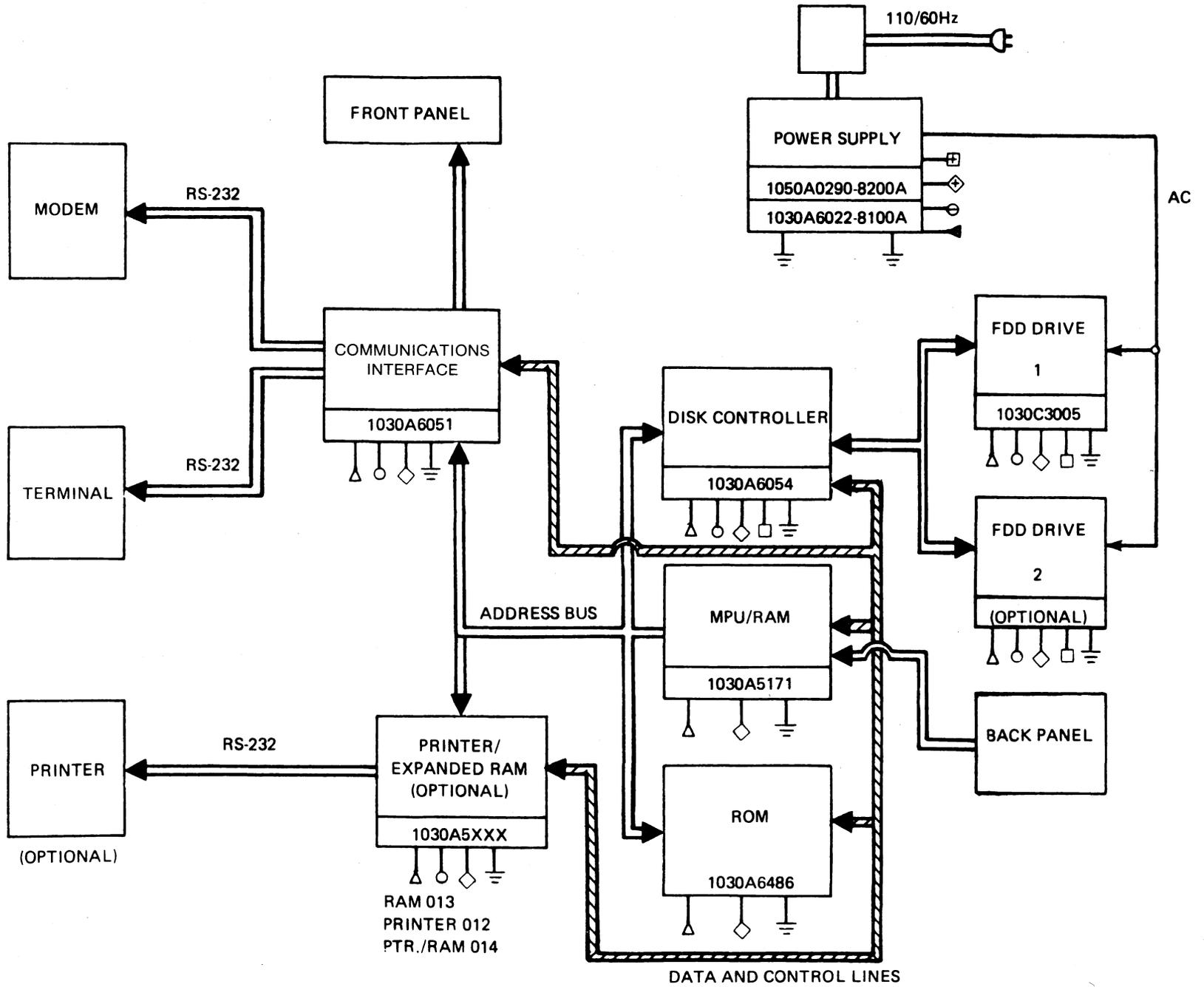


Fig. 3—Comm-Stor II Operating System-Block Diagram

Configuration Memory—Configuration memory is a non-volatile type of RAM memory which stores user defined equipment configuration. When the Comm-Stor II unit is turned off, the contents of configuration memory are maintained by a 4.5 v battery. The current requirement of this memory is so low that battery life is approximately equal to normal shelf life (one year). All operating parameters such as commands, control codes, communications protocol, answerbacks, and operating modes are stored in configuration memory. The parameters remain in memory as long as the battery is not removed when the unit is turned off. The information stored in configuration memory may be altered by the operator using the terminal keyboard with a Configuration diskette in the drive.

Diskette Drive(s)—The microprocessor has direct control of the diskette drive(s) (one or two) installed in the Comm-Stor II unit. Data is read from or written to the diskette(s) as required by the user.

Communications Interface—All data transfers through the data communications interfaces occur through the microprocessor. The microprocessor has the ability to control the outgoing EIA leads and senses the incoming activity and control line transitions at the three ports. The ports are separate from each other, and are accessed by specific distinct commands. (Refer to Table A.)

2.06 The Comm-Stor II controller comprises a minimum of four and a maximum of six printed circuit (PC) cards. These are inserted into a base card assembly and held in place by a wire-form card retainer. The standard PC cards are: the microprocessor card, the communication ports card, the ROM memory card, the diskette interface card, and a card for optional features. The optional feature card may be one of the following: printer port/expanded RAM, printer port only, or 4K expanded RAM only. A sixth card slot is available for future expansion.

TABLE A
EIA RS-232C CONNECTIONS

PIN	DESCRIPTION	TERMINAL PORT		MODEM PORT		PRINTER PORT	
		USED	DIRECTION	USED	DIRECTION	USED	DIRECTION
1	Chassis Ground	X	—	X	—	X	—
2	Transmitted Data	X	in	X	out		
3	Received Data	X	out	X	in	X	out
4	Request to Send	X	in	X	out		
5	Clear to Send	X	out	X	in		
6	Data Set Ready	X	out	X	in	X	out
7	Circuit Ground	X	—	X	—	X	—
8	Carrier Detect	X	out	X	in	X	out
11, 19	Secondary Request to Send	X	in	X	out	X	in
15	Modem Transmit Clock			X	in		
17	Modem Receive Clock			X	in		
12	Secondary Carrier Detect	X	out	X	in		
20	Data Terminal Ready	X	in	X	out	X	in
22	Ring Indicator	X	out	X	in	X	out

Note: Direction refers to signal direction with respect to the Comm-Stor II unit at each port (e.g., transmitted data is out of the Comm-Stor II unit on Pin 2 at the modem port).

3. OPERATIONAL FEATURES

8A1/8B1 PROTOCOL

3.01 The 8A1/8B1 protocols are *private line* networks which include a *network controller* and one or more *stations*. Each station comprises a Comm-Stor II unit equipped with 8A1/8B1 option, a terminal, a data set, and optionally, a printer. The term private line refers to a full duplex-four wire connection between the network controller and the station. The connection is *always* intact and does not require dial-up procedures.

3.02 The Comm-Stor II unit functions as the *station controller*. It permits the station to be configured for operation according to network requirements. The unit also provides the following control functions:

- station identification
- station responses to polling and addressing
- message maintenance
- control of station devices (terminal, printer, etc.)

3.03 The Comm-Stor unit recognizes the stations *polling* and *addressing* sequences, then responds according to the stations status (e.g., ready to receive, ready to send). Incoming messages are received and may be transferred to diskette storage; outgoing messages are maintained on diskette until the network controller requests the unit to send. Finally, messages may be displayed on the terminal, printed, or both.

MESSAGE STORAGE

3.04 The Comm-Stor II unit has the ability to store new messages. The ENTER command prepares the Comm-Stor II unit to receive these messages from the terminal; the RECEIVE command prepares the unit to receive data entered through the modem port. Line Cancel and Character Delete editing functions are available when entering data from the terminal.

3.05 A message which is no longer needed is deleted from the diskette by using the CANCEL command. This provides available space for new messages. Messages may also be copied from one diskette to another in a dual drive system. When a message is CANCELLED, the

appropriate message name is deleted from the Directory.

DISKETTE DIRECTORY

3.06 As messages are stored, the operator assigns each a MESSAGE NAME which is automatically entered into a Directory. This Directory may be displayed on the terminal, printed, or both. All or portions of the Directory may be listed, either in the sequence the names appear in the Directory or in alpha-numeric order.

3.07 A single message name or a group of message names may also be displayed or printed in sequential or alpha-numerical order upon the operator's request.

VARIABLE BIT RATE SETTINGS

3.08 For operators who frequently change the bit rate settings at different ports, the Comm-Stor II unit can change these bit rate settings using commands from the terminal. Any one of the 15 bit rate settings in Table A may be selected.

**TABLE B
AVAILABLE BIT RATES**

50	300	2400
75	600	3600
110	1200	4800
134	1800	7200*
250	2000	9600*

*The terminal port is limited to 4800 bps batch input. However, it can output and receive conversationally up to 9600 bps.

EXTENDED USER COMMAND TABLE

3.09 The User Command Table is a portion of memory in which the user may store frequently used sequences of commands which are normally executed by the operator. The command sequences are executed when a trigger character is received at the terminal port. This allows the operator to execute a frequently used sequence of commands using one or two keystrokes. Optionally, the command sequence may be initiated during the power-up operation.

3.10 When the trigger character (usually a control code) is entered, the Comm-Stor II unit searches the User Command Table and selects that series of commands associated with that character; the operation is then executed automatically.

3.11 Each string of commands and its respective trigger character are placed in the Comm-Stor II unit's memory during the configuration process.

MESSAGE EDITING

3.12 The Editor allows the operator to edit an entire message instead of using only Line Cancel and Character Delete functions. This feature provides character string searches and replacements, as well as "line-oriented" editing capabilities. Line editing operations consist of LIST, NUMBER AND LIST, INSERT, DELETE, REPLACE, APPEND, and CLEAR BUFFER.

3.13 A message to be edited is stored in a temporary "scratch pad" area on the diskette. After the message is edited, it is placed in permanent storage on the diskette. The message may be recalled to the scratch pad area at any time for additional editing. The size of the scratch pad area is specified when the User diskette is created. It may contain a maximum of 254 lines of text at any one time.

STANDARD/EXTENDED FORMS

3.14 The Standard Forms option provides operator prompted "forms fill-in" capability. Once a form is created by the user and stored on diskette, it may be recalled at any time by the

operator for data entry or editing. Each form consists of fixed information which gives the form its structure and information entered by the operator which may vary with each form and message. The entire form, or just the information entered by the operator, may be sent to a remote computer, displayed on a terminal or printed.

3.15 The Extended Forms option greatly increases forms fill-in capabilities. The Comm-Stor II unit automatically checks and verifies the accuracy of operator information and assists the operator in other ways which significantly increase the rate of data entry.

RACK MOUNT CABINET

3.16 This option provides standard 19 inch rack mount with the RESTART and BINARY switches relocated to the front panel (Figure 4).

RAM MEMORY EXPANSION

3.17 An expanded 4K of RAM Memory is available to allow the user to create a form of 5120 characters as compared to the 1024 character size available with the standard package. Two additional increments of 4K are available for use with Extended Forms.

3.18 All or part of the 4K RAM may be allocated by the operator for terminal input buffering. A description of buffering is provided in the *How to Use ... Comm-Stor II with the 8A1/8B1 Protocol (999-300-151)* manual.



Fig. 4—Comm-Stor II Rack Mount Installation

Comm-Stor DISKETTES

A. 8A1/8B1 System Diskette

3.19 This diskette contains 8A1/8B1 protocol information. It is used only with Comm-Stor II units equipped to function in an 8A1/8B1 private line network.

3.20 The diskette also contains the configuration procedure for the 8A1/8B1 unit and the forms generation procedures for the Extended Forms option.

B. Refresh Diskettes

3.21 Once the Comm-Stor II unit is configured, it is possible to store this configuration on a diskette called a Refresh diskette. After a Refresh diskette has been created, another Comm-Stor II unit can be identically configured by inserting the Refresh diskette and pressing the RESTART button.

C. User Diskette

3.22 The User diskette contains a message Directory and is used for all storage operations. It is created with the Configurator and is initialized with such parameters as the maximum number of characters in the message name and the maximum message length.

ISOCHRONOUS INTERFACE

3.23 Isochronous operation allows transmission and reception of 10 bits, including Start/Stop data characters, through Bell 201 and 208 data sets. This provides an Asynchronous character structure through Synchronous hardware. The start of each character is arbitrarily relative to the character preceding it and following it. The 10 bits of the character are synchronized to the data set clock. This mode of transmission is considered to be "Bit Synchronous/Character Asynchronous."

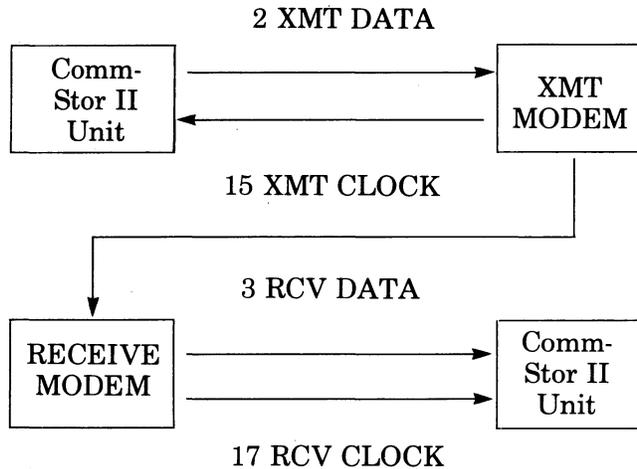


Fig. 5—Isochronous Clock and Data Signal Flow

3.24 In isochronous operation, there is one master clock (the transmitting data set clock) and all other clocks are synchronized to it. The Comm-Stor II unit receives its clock signals on Pins 15 and 17 of the cable to the data set. Figure 5 provides an illustration of the clock and data signal flow between two Comm-Stor II units with the unit on the left transmitting data to the right.

Comm-Stor II COMMANDS

3.25 The following commands are available on the Comm-Stor II unit equipped with the 8A1/8B1 option.

- .E Enter (File).** Prepare the unit to accept a message from the terminal. As the message is entered, the current line being input may be edited using the Standard Editing Characters. The message is terminated with the ETX characters.

- .EA Enter Automatic.** Same as .E command, except the unit automatically assigns the current value of the Auto-Name (see .LI) as the message name. The Auto-Name is then internally incremented.
- .LI Load Initial (Name).** Load the initial value of the Auto-Name. The Auto-Name is automatically assigned to messages when using the .EA command. The bracketed portion will be incremented after each assignment.
- .LE Load Extension.** Load an extension into the Comm-Stor II unit. New messages will be assigned this extension. If an extension is not specified in the command string, the current extension loaded in the unit will be cleared.
- .WP Write-Protect.** Magnetically mark messages or the entire diskette as write-protected. Write-protected messages cannot be canceled; write-protected diskettes cannot be written on.
- .WE Write-Enable.** Remove write-protection from either messages or the diskette.
- .CN Cancel.** Cancel (delete) selected messages from the diskette. If a range of messages is specified, the word "SURE?" is displayed before the function is performed. Type "Y" (yes) to start the function, or any other character to void it.
- .AM Alpha Mode.** Cause message names to be acted on in alphabetical order when using .D, .P, .DD, .PD, .C, and .CN (also see .SM).
- .SM Sequential Mode.** In this mode, messages and message names are handled in sequential order (the order in which they are stored on the diskette) when using .D, .P, .DD, .PD, .C, and .CN (also see .AM).
- .D Display (Message).** Display on the terminal one or more messages in either alphabetical or sequential order, depending on the current mode.
- .P Print (Message).** Display one or more messages on the printer. Similar to .D command.
- .DD Display Directory.** Display (on the terminal) part or all of the directory in either alphabetical or sequential order, depending on the current mode.
- .PD Print Directory.** Display the directory on the printer. Similar to .DD command.
- .DS Display System Status.** Display status of Comm-Stor II unit on the terminal. If a diskette is loaded, certain diskette parameters will also be displayed.
- .DS Display Directory Status.** Display the size of the largest free space and total free space of the diskette directory. The output may be directed to the printer by specifying .DSs/P.
- .BM Baud Rate Modem** Used to set bit rates
- .BP Baud Rate Printer** from keyboard when bit
- .BT Baud Rate Terminal** Rate Switch is set to 0.
- .BM I Isochronous Command.** Bit rate at the modem port will be controlled by the data set. The model bit rate switch must be set to 0.
- .IM/.IX Included Mode/Included Mode Exit.** This mode causes the message name to become the initial text of the message when using .E or .EA commands.
- .RE Restore.** If message name and/or extension is not specified, this command is interpreted as a Restore command. It is used to combine all of the free space on a diskette into one contiguous area following the last message.
- .RE Rename.** If a message name and/or extension is specified, the .RE is interpreted as a Rename command. It is used to modify the name and/or extension of an existing message.
- .C Copy.** Copy one or more messages from drive 1 to drive 2 in either sequentially or alphabetically, depending on the current mode.
- .F Finish.** This command permits the operator to remove the User diskette while the Comm-Stor II unit is connected to the network controller. The network controller is automatically notified that the station is *not* available to receive messages.
- .CT/.TX Copy-to-Terminal.** Recall messages from the User diskette's *spool* file and output them through the Comm-Stor II unit's terminal port.
- .CP/.PX Copy-to-Printer.** Recall messages from the *spool* file and output them through the Comm-Stor II unit's printer port.

.I **Inquiry/Response.** Place an existing message at the *top* of the message queue for immediate transmission to the network controller.

RUBOUT Character (Delete). Delete characters in reverse order, starting with the last one, one character for each depression of the RUBOUT key. On various terminals this key may be called DEL, BS, or RUB.

Control X Line Cancel. Cancel entry of the current line.

Control C End of Text. An ETX character is used to terminate the Enter mode (unless in the Binary mode), which uses the Binary Switch). A Control C is also used to close a "Forms" file on diskette.

Control S Hold. Pause during execution of the current operation. Execution is resumed by using the Resume character, Control Q, or canceled by using the Reset character, Control T.

Control Q Resume. Used after a Hold command to resume execution of the current operation.

Control T Reset. Cancel the current output operation.

4. TECHNICAL DATA

POWER REQUIREMENTS

4.01 Power requirements of the Comm-Stor II unit are shown in Table C. The standard unit requires 60 ± 1 Hz power.

**TABLE C
POWER REQUIREMENTS**

MODEL	VOLTAGE	CURRENT
8120A	115 VAC	2.5 amp
	230 VAC	1.8 amp
8220A	115 VAC	2.5 amp
	230 VAC	1.8 amp

ENVIRONMENTAL REQUIREMENTS

4.02 The allowable ambient temperature is 40.25°F-95.25°F or 4.25°C-35.25°C.

4.03 The allowable ambient humidity is 20%-80% relative humidity.

WEIGHT AND DIMENSIONS

4.04 Weight and dimensions of the Comm-Stor II unit are shown in Table D.

5. ERROR MESSAGES

5.01 Table E lists the most common error messages.

**TABLE D
WEIGHT AND DIMENSIONS**

MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
8120A	5.25 in.	13.75 in.	20 in.	35 lbs.
	13.34 cm.	34.93 cm.	50.80 cm.	16 kg.
8220A	9.6 in.	13.75 in.	20 in.	55 lbs.
	24.38 cm.	34.93 cm.	50.80 cm.	25 kg.

TABLE E
ERROR MESSAGES

MESSAGE	DESCRIPTION
NOT RDY	Indicates an attempt to access a drive when a diskette was either not inserted or improperly inserted, or an attempt to access drive 2 in a single drive system.
DISKETTE	Indicates the system was unable to locate the proper location on a diskette where a file is stored or will be stored. The probable cause of this error is a bad diskette.
BAD READ	Indicates a message or part of a message could not be read without CRC errors in eight attempts to read the message.
PROTECT	Indicates an attempt to write on a protected diskette or cancel a protected message.
WRONG DK	Indicates the diskette is not a User diskette or it is a bad User diskette.
	or
	The User diskette does not contain a spool message necessary for 8A1/8B1 operation.
PREP SYS	Indicates the baud switch was not set to KYBD position when a baud command was input,
	or
	A form was not properly loaded by the operator prior to using Forms Operations.
FULL DSK	Indicates the Directory is full. Either a file must be canceled from the diskette before entering a new message or a new diskette must be used.
NO FIND	Indicates a requested message does not exist in the Directory. Check to see that message name and extension completely agree with the Directory entry,
	or
	A search string was not found in the Forms mode.
ILLEGAL	An illegal operation has been attempted. Examples: Edit (.ED) a binary message; or, when in the Forms mode, attempting to Enter a non-forms message; or, Requesting and Edit or Forms operation without the option installed; or, Don't Care or Reject character used while in Alpha mode; or, An Enter Automatic command issued without an Auto-Name (.LI command) loaded.
BAD SIZE	In Edit mode: There was an attempt to Save a message with no data. In Forms mode: The number of entries in the message exceeds the number of variable fields in the form. The wrong form was probably loaded into the forms buffer,
	or
	The form is too big for the buffer.
USR TABL	Indicates the system detected an improper command from the User Command Table. The User Command Table must be corrected using the Configuration diskette.

TABLE E (CONT)
ERROR MESSAGES

MESSAGE	DESCRIPTION
NO ROOM	<p>Indicates a message is being Edited or Saved from the scratch pad is larger than the configured maximum message length,</p> <p style="text-align: center;">or</p> <p>An attempt was made to exceed the capacity of the scratch pad with an EDIT, INSERT, REPLACE, or APPEND command,</p> <p style="text-align: center;">or</p> <p>When merging a message in the Forms mode, the forms data field is too small for the forms data,</p> <p style="text-align: center;">or</p> <p>An attempt was made to Edit a message on a diskette which was not configured to have a scratch pad,</p> <p style="text-align: center;">or</p> <p>A Search/Replace operation results in a line length exceeding the configured value.</p>
OVERRUN	<p>Input data has exceeded the input rate or file capacity of the system, and data is lost.</p> <p style="text-align: center;">or</p> <p>The terminal buffer has exceeded its configured capacity.</p> <p style="text-align: center;">or</p> <p>A buffer is improperly configured.</p>
SYSTEM	<p>Indicates that the system has detected an equipment problem,</p> <p style="text-align: center;">or</p> <p>There is a diskette with a bad Directory.</p> <p>If the error occurs when another diskette is used, the operator should note the conditions which created the error and contact maintenance personnel.</p> <p>An improper command has been entered. Example: .CM was entered instead of .CN,</p> <p style="text-align: center;">or</p> <p>A variable message length command (.DS S or .RE with no file name/extension) was entered for a fixed message length diskette.</p>
Bell	<p>This error occurs when the operator forgets to enter a period to symbolize the start of a command.</p> <p>It is also used to indicate the completion of an Enter or Enter Automatic operation.</p>

6. CONFIGURATION PARAMETERS

6.01 The following parameters are configurable in Comm-Stor II systems equipped with the 8A1/8B1 option using the 8A1/8B1 System diskette. The default values are given in parentheses. For further information refer to the manual *How to Use... Comm-Stor II with the 8A1/8B1 Protocol* (Bell system number 993-300-151).

- | | |
|---|--|
| <ul style="list-style-type: none"> 1: **1-2 UNUSED** 3: END OF LINE CHARACTER ([CR]) 4: SYSTEM TO ADD LINE FEED AFTER CARRIAGE RETURN? (YES) 5: LINE FEED CHARACTER ([LF]) 6: CARRIAGE RETURN CHARACTER FOR SYSTEM MESSAGES ([CR]) 7: LINE FEED CHARACTER FOR SYSTEM MESSAGES ([LF]) 8: END OF TEXT CHARACTER ([ETX]) 9: TRANSMIT "END OF TEXT" CHARACTER? (NO) 10: **10-11 UNUSED** 12: "RESET" CHARACTER ([^ T]) 13: SPACE CHARACTER FOR SYSTEM MESSAGES () 14: FIRST CHARACTER OF ESCAPE SEQUENCE ([ESC]) 15: PARITY ERROR SYMBOL (?) 16: **16-18 UNUSED** 19: "HOLD" CHARACTER ([^ S]) 20: "RESUME" CHARACTER ([^ Q]) 21: OUTPUT NUMERICAL ERROR MESSAGES? (NO) 22: **UNUSED** 23: SPECIAL OUTPUT CHARACTER #1 ([CR])
PORTS (NONE)
DELAY FACTOR/SUBSTITUTION (1) 24: SPECIAL OUTPUT CHARACTER #2 ([CR])
PORTS (NONE)
DELAY FACTOR/SUBSTITUTION (1) 25: SPECIAL OUTPUT CHARACTER # ([CR])
PORTS (NONE)
DELAY FACTOR/SUBSTITUTION (1) 26: SPECIAL OUTPUT CHARACTER #4 ([CR])
PORTS (NONE)
DELAY FACTOR/SUBSTITUTION (1) 27: "DELETE" CHARACTER ENTERED ([RUB]) 28: "DELETE" CHARACTER ECHOED ([BS]) 29: "LINE CANCEL" CHARACTER ([^ X]) | <ul style="list-style-type: none"> 30: NUMBER OF LINES ON PAGE (23) 31: STOP DISPLAY AFTER EACH PAGE? (NO) 32: SUBSTITUTE TERMINAL PARITY ERRORS WITH ERROR SYMBOL? (YES) 33: MODEM OFF-LINE ALERT CHARACTER ([^ G]) 34: INHIBIT ECHO TO TERMINAL? (NO) 35: IGNORE "NULL" CHARACTER FROM TERMINAL? (YES) 36: TERMINAL "NULL" CHARACTER ([NULL]) 37: NORMAL TERMINAL DATA PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY) (8)
EIGHTH DATA BIT (0) 38: **UNUSED** 39: TERMINAL INTERFACE CONTROL (11110)
40/1 TERMINAL? (NO) 40: DOES TERMINAL PROVIDE "DATA TERM READY?" (NO) 41: **41-54 UNUSED** 55: SUBSTITUTE MODEM PARITY ERRORS WITH ERROR SYMBOL? (YES) 56: CHECK FOR MODEM FRAMING ERRORS? (NO) 57: **UNUSED** 58: NORMAL MODEM DATA PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY) (8)
EIGHTH DATA BIT (0) 59: **UNUSED** 60: DOES MODEM PROVIDE "DATA SET READY"? (YES) 61: PRINTER PORT INSTALLED? (YES) 62: PRINTER DATA PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY) (8)
EIGHTH DATA BIT (0) 63: PRINTER INTERFACE CONTROL (11110) 64: DOES PRINTER PROVIDE "DATA TERM READY"? (NO) 65: DOES PRINTER PROVIDE "SEC. REQUEST TO SEND"? (NO) 66: DOES PRINTER REQUIRE "LINE FEED" AFTER "CARRIAGE RETURN"? (YES) 67: CHARACTER TO SEPARATE COMMAND AND ARGUMENT () |
|---|--|

- 68: CHARACTER TO SEPARATE FILE NAMES(/)
- 69: CHARACTER TO START "ENTER AUTOMATIC" INCREMENTING FIELD (-)
- 70: CHARACTER TO END "ENTER AUTOMATIC" INCREMENTING FIELD (>)
- 71: CHARACTER TO SEPARATE FILE NAME AND EXTENSION (+)
- 72: CHARACTER TO SEPARATE COMMAND ATTACHED INSTRUCTION (#)
- 73: DIRECTORY BOUNDARY SPECIFICATION CHARACTER (*)
- 74: "DON'T CARE" CHARACTER FOR EXTENSION (?)
- 75: **UNUSED**
- 76: USER RESPONSE TO "SURE?" MESSAGE (Y)
- 77: SYSTEM COMMAND CHARACTER—TERMINAL AND MODEM (.)
- 78: **UNUSED**
- 79: "SELECT DRIVE 1" CHARACTER (1)
- 80: "SELECT DRIVE 2" CHARACTER (2)
- 81: "BAUD MODEM" COMMAND (BM)
- 82: "BAUD PRINTER" COMMAND (BP)
- 83: "BAUD TERMINAL" COMMAND (BT)
- 84: "COPY" COMMAND (C)
- 85: "CANCEL" COMMAND (CN)
- 86: "DISPLAY" COMMAND (D)
- 87: "DISPLAY DIRECTORY" COMMAND (DD)
- 88: "DISPLAY STATUS" COMMAND (DS)
- 89: "ENTER" COMMAND (E)
- 90: "ENTER AUTOMATIC" COMMAND (EA)
- 91: "TERMINAL COPY" COMMAND (CT)
- 92: "TERMINAL COPY EXIT" COMMAND (TX)
- 93: "INCLUDE MODE" COMMAND (IM)
- 94: "INCLUDE MODE EXIT" COMMAND (IX)
- 95: "LOAD EXTENSION" COMMAND (LE)
- 96: "LOAD INITIAL VALUE" COMMAND (LI)
- 97: "PRINTER COPY" COMMAND (CP)
- 98: "PRINTER COPY EXIT" COMMAND (PX)
- 99: "PRINT" COMMAND (P)
- 100: "PRINTER DIRECTORY" COMMAND (DP)
- 101: **UNUSED**
- 102: "RENAME" COMMAND (RE)
- 103: "INQUIRY" COMMAND (I)
- 104: **104-105 UNUSED**
- 106: "SEQUENTIAL MODE" COMMAND (SM)
- 107: "ALPHA MODE" COMMAND (AM)
- 108: "FINISH" COMMAND (F)
- 109: "WRITE-ENABLE" COMMAND (WE)
- 110: "WRITE-PROTECT" COMMAND (WP)
- 111: EDIT OPTION INSTALLED? (YES)
- 112: EDITOR LINE NUMBER SEPARATOR (,)
- 113: EDITOR CHARACTER STRING DELIMITER (/)
- 114: EDIT COMMAND CHARACTER (;)
- 115: PREPARE TO "EDIT" COMMAND (ED)
- 116: "SAVE FILE" COMMAND (SV)
- 117: EDITOR "APPEND" COMMAND (A)
- 118: EDITOR "DELETE" COMMAND (D)
- 119: EDITOR "INSERT" COMMAND (I)
- 120: EDITOR "LINE COUNT" COMMAND (=)
- 121: EDITOR "CLEAR" COMMAND (Q)
- 122: EDITOR "LIST" COMMAND (L)
- 123: EDITOR "LIST-NUMBERED" COMMAND (N)
- 124: EDITOR "REPLACE" COMMAND (R)
- 125: EDITOR "SEARCH" COMMAND (S)
- 126: FORMS OPTION INSTALLED? (YES)
- 127: CHARACTER TO START FORMS VARIABLE FIELD (I)
- 128: CHARACTER TO END FORMS VARIABLE FIELD (J)
- 129: "FORMS COMPLETE" COMMAND (FC)
- 130: "FORMS VARIABLE" COMMAND (FV)
- 131: "FORMS EXIT" COMMAND (FX)
- 132: FORMS MODE STRING SEARCH CHARACTER ([^ Y])
- 133: FORMS MODE-UTILITY CHARACTER ([^ L])
- 134: FORMS "LINE RE-ENTER" CHARACTER ([^ Z])
- 135: FORMS MODE-FILL IN FROM DRIVE 1 ([^ 0])
- 136: FORMS MODE-FILL IN FROM DRIVE 2 ([^ N])
- 137: FORMS "TAB" CHARACTER ([CR])
- 138: **138-139 UNUSED**
- 140: USER COMMAND TABLE (**NONE**)
- 141: SELF-START ON POWER-UP OR RESTART? (NO)
- 142: **UNUSED**
- 143: INHIBIT AUTO LINEFEED TO MODEM PORT? (NO)
- 144: TERMINAL BUFFER SIZE (0)
- 145: **UNUSED**
- 146: USE EIA LINES TO CLOSE FILES? (NO)
- 147: **147-149 UNUSED**
- 150: "FORMS COMPLETE" COMMAND (SAME AS #129) (FC)
- 151: "FORMS VARIABLE" COMMAND (SAME AS #130) (FV)

- 152: "FORMS EXIT" COMMAND (SAME AS #131) (FX)
 153: AUTO LOAD MODE ENABLED? (NO)
 154: DOES TERMINAL HAVE CURSOR CONTROL? (NO)
 155: REPRINT PAGE? (NO)
 156: REPRINT LINE? (NO)
 157: SKIP INTERMEDIATE LINES? (NO)
 158: "SKIPPED LINE" CHARACTER (-)
 159: ENABLE REDISPLY? (NO)
 160: "GO TO TOP OF PAGE" CHARACTER #1 ([^ A])
 CHARACTER #2 ([^ A])
 161: "CLEAR AND RESTART PAGE" CHARACTER ([^ L])
 162: "BACKFIELD" CHARACTER #1 ([^ B])
 CHARACTER #2 ([^ B])
 163: "CLOSE FIELD" CHARACTER #1 ([CR])
 CHARACTER #2 ([CR])
 164: "TAB" CHARACTER #1 ([TAB])
 CHARACTER #2 ([TAB])
 165: "AUTO TAB" CHARACTER ([^ Z])
 166: "ERROR OVERRIDE" CHARACTER ([^ K])
 167: "CLOSE PAGE" CHARACTER ([^ P])
 168: "VERIFY PAGE" CHARACTER ([^ V])
 169: "VERIFY BYPASS" CHARACTER ([^ Y])
 170: "CLOSE FORM" CHARACTER (SAME AS #8) ([ETX])
 171: FILL IN FROM DRIVE 1 CHARACTER (SAME AS #135) ([^ 0])
 172: FILL IN FROM DRIVE 2 CHARACTER (SAME AS #136) ([^ N])
 173: CURSOR RIGHT CHARACTER ENTERED #1 ([^ R])
 CHARACTER ENTERED #2 ([^ R])
 174: CURSOR LEFT CHARACTER ENTERED (SAME AS #27) ([RUB])
 175: CURSOR LEFT OUTPUT CHARACTER (/)
 176: CURSOR RIGHT OUTPUT CHARACTER ()
 177: CURSOR UP OUTPUT CHARACTER ([^ K])
 178: CURSOR DOWN OUTPUT CHARACTER ([LF])
 179: CARRIAGE RETURN OUTPUT CHARACTER ([CR])
 180: CURSOR HOME OUTPUT CHARACTER ([^ ^])
 181: CLEAR SCREEN OUTPUT CHARACTER ([^ Z])
 182: LITERAL FIELD FRAMING CHARACTER ([^ W])
 183: SECURITY FIELD FILL CHARACTER (*)
 184: DECIMAL POINT CHARACTER (.)
 185: PLUS SIGN CHARACTER (**NONE**)
 186: MINUS SIGN CHARACTER (-)
 187: FIELD MISMATCH ERROR CHARACTER (?)
 188: NUMERIC ERROR CHARACTER (#)
 189: EMPTY FIELD FILL CHARACTER ()
 190: OUTPUT FIXED LENGTH FIELDS? (NO)
 191: OUTPUT WITH DELIMITERS? (YES)
 192: MID-LINE OUTPUT DELIMITER ([CR])
 193: END-OF-LINE OUTPUT DELIMITER ([CR])
 194: SUBSTITUTION TABLE MINOR DELIMITER (,)
 195: SUBSTITUTION TABLE AND ALLOWABLE ENTRY TABLE MAJOR DELIMITER (;)
 196: END OF PAGE INDICATION OPTION (0, 1, 2, or 3) (2)
 197: VARIABLE FIELD INDICATOR CHARACTER #1 (<)
 CHARACTER #2 (>)
 198: INHIBIT OUTPUT OR SKIPPED PAGES? (NO)
- PART 2
1. SPECIFY A-T; ENTER X TO EXIT:
 - 1A: SENDER/RECEIVER DESELECT ([^ D])
 - 1B: RESTART ([^ B])
 - 1C: ALTERNATE RESTART ([^ A])
 - 1D: SENDER DESELECT, X-OFF ([^ S])
 - 1E: ALTERNATE SENDER DESELECT (**NONE**)
 - 1F: SENT INTERRUPT ([EXT])
 - 1G: ALTERNATE SENT INTERRUPT ([GS])
 - 1H: RECEIVED INTERRUPT ([ETX])
 - 1I: POLLING SEQUENCE (**NONE**)
 - 1J: READY ANSWERBACK (/ [^ F])
 - 1K: NOT READY #1 (/ /)
 - 1L: NOT READY #2 ([^ X] [^ F])
 - 1M: NOT READY #3 ([^ X] [^ U])
 - 1N: NOT READY #4 ([^ U] [^ D])
 - 1O: ALTERNATE NOT READY #4 ([^ U] [^ D])
 - 1P: ADDRESS #1 (**NONE**)
 - 1Q: ADDRESS #2 (**NONE**)
 - 1R: ADDRESS #3 (**NONE**)
 - 1S: ADDRESS #4 (**NONE**)
 - 1T: ADDRESS AND POLL OPTIONAL CHARACTER: ([RUB])

- 2: NUMBER OF CHARACTERS IN POLLING SEQUENCE:
 - A) 2 CHARACTERS
 - B) 2 CHARACTERS FOLLOWED BY OPTIONAL CHARACTER
 SELECT A OR B: (A)
- 3: **3-5 UNUSED**
- 6: COMMUNICATIONS CHANNEL CHARACTERISTICS:
 - A) NON-SIMULTANEOUS SEND AND RECEIVE—8A1
 - B) SIMULTANEOUS SEND AND RECEIVE—8B1
 SELECTING OPTION 6B ALSO FORCES SELECTION OF OPTIONS 9B and 23D

SELECT A OR B: (A)
- 7: **7-8 UNUSED**
- 9: SENT INTERRUPT OPTION:
 - A) STOP OR SENT INTERRUPT OR RECEIVED INTERRUPT CODE
 - B) STOP ON RECEIVED INTERRUPT CODE ONLY
 SELECT A OR B: (B)
- 10: **UNUSED**
- 11: REQUEST TO SEND TURNOFF:

TURN OFF RTS N CHARACTER INTERVALS AFTER LAST CHARACTER (WHERE N IS A NUMBER BETWEEN 0 AND 7) (0)
- 12: **12-16 UNUSED**
- 17: ANSWERBACK CHARACTERISTICS:
 - 1 = ANSWERBACK TO ADDRESS #N
 - 2 = ANSWERBACK TO ADDRESS #N AFTER OPTIONAL CHARACTER
 - 3 = NO ANSWERBACK TO ADDRESS #N
 ADDRESS #1 (1)

ADDRESS #2 (1)

ADDRESS #3 (1)

ADDRESS #4 (1)
- 18: ANSWERBACK TO POLL IF NO TRAFFIC
 - A) ANSWER READY ANSWERBACK IF STATION IS CAPABLE OF RECEIVING

ANSWER NOT READY #1 IF STATION IS NOT CAPABLE OF RECEIVING
 - B) ALWAYS ANSWER READY ANSWERBACK
 SELECT A OR B: (A)

(MUST BE D FOR 8B1)
- 19: **19-22 UNUSED**
- 23: TRANSMIT BREAK SIGNAL
 - A) SEND CONTINUOUS BREAK
 - B) SEND TIMED BREAK BUT DO NOT DESELECT
 - C) SEND TIMED BREAK AND DESELECT
 - D) DO NOT SEND BREAK
 SELECT A, B, C, OR D: (D)
- 24: **24-39 UNUSED**
- 40: ANSWERBACK RESPONSES TO ROLL CALL OPERATION:
 - A) NO RESPONSE
 - B) SEND STATION-RECEIVE-STATUS
 - C) SEND STATION-RECEIVE-STATUS AND ERROR-DETECT-STATUS
 SELECT A, B, OR C: (C)
- 41: USE ADDRESS #4 FOR IMMEDIATE RECEIPT OF TRAFFIC-AFTER-READY RESPONSE? (NO)
- 42: **42-49 UNUSED**
- 50: ALTERNATE END-OF-TEXT CHARACTER ([GS])
- 51: STORE RECEIVED MESSAGES ON DRIVE #2 (NO)
- 52: AUTOMATICALLY CANCEL SENT MESSAGES (NO)
- 53: AUTOMATICALLY CANCEL RECEIVED MESSAGES (NO)
- 54: SEND BULK TRANSMISSIONS (NO)
- 55: MESSAGE SEPARATOR FOR BULK TRANSMISSIONS ([^ W])
- 56: ENABLE REMOTE NAMING OF RECEIVED MESSAGES (NO)
- 57: PRINT INQUIRY RESPONSE (NO)
- 58: RETRANSMIT SEQUENCE ([^ U])
- 59: CHARACTER SEQUENCE SENT BEFORE MESSAGE TRANSMISSION (**NONE**)
- 60: LOAD SYSTEM DISKETTE FROM DRIVE #2 (NO)
- 61: STORE ACKNOWLEDGEMENT TO SENT MESSAGES? (NO)
- 62: UNPOLLED ALARM INTERNAL (**NONE**)
- 63: ADD EXTRA LINES TO RECEIVED MESSAGES (NO)

STATUS DISPLAY FORMAT

Last System Error Code	Parity Error	Terminal Ready	Printer Ready	Drive 1 Ready	Drive 2 Ready	Write* Protect
Alpha Mode	Copy To Printer	Included Mode	Copy to Terminal	Finish Mode	Forms Mode	Forms Variable
Number of Messages on Diskette	Maximum Number of Messages Per Diskette*		Maximum Number of Sectors Per Message* (1 sector = 128 characters)		Maximum Number of Characters Per Line*	
Number of Lines on Scratch Pad	Number of Lines Per Page	Maximum Number of Characters in Message Name*		Maximum Number of Character in Extension*		

Current Extension

Auto-Name for Enter Automatic Command

*These items are controlled by the User diskette in use.

Figure 6—Status Display Format