HOW TO CONFIGURE...

Comm-Stor* II

Communications Storage Unit

* Comm-Stor is a trademark of SYKES DATATRONICS, Inc.

HOW TO CONFIGURE...

Comm-Stor II

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CHAPTER 1

INTRODUCTION

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1. GENERAL

Data terminal equipment used in communications systems must have the flexibility to meet the particular requirements of the system with which it will be used. Such requirements will vary with respect to the needs of the operator, the mode of transmission and the protocol requirements of the remote computer.

Physical switches are used by many terminals to accommodate the specific requirements of particular applications. These switches permit the operator to adapt each system to such variables as transmission speed and character parity. The more advanced terminals allow for changes of transmission protocol and control codes. However, such modifications are still performed by manually setting the appropriate switches.

As a terminal attachment, Comm-Stor II is also capable of accommodating individual system requirements. The difference is that Comm-Stor II can be "configured" using the English language rather than switches. Comm-Stor II "asks" the operator which variables are to be modified. The operator then responds by indicating the particular parameters and the necessary changes. These responses are interpreted by Comm-Stor II and stored in a special memory known as the CONFIGURATION MEMORY.

The CONFIGURATION DISKETTE places Comm-Stor II in a special mode whereby these questions concerning the different system parameters are presented to the operator. The operator can first review all of Comm-Stor II's current operating parameters and then make changes as required.

Although Comm-Stor II is shipped from the factory with a standard set of instructions and system responses installed, provisions have been made to configure Comm-Stor II to match the particular requirements of a wide variety of applications. The purpose of this manual is to provide detailed information on what is configurable and how to perform the Configuration. Each configurable parameter is discussed in the order it appears on the terminal during the configuration process. The appropriate choice of system parameters requires a general knowledge of data communications as well as the specific requirements of any device connected to Comm-Stor II. It is therefore suggested that only persons with such knowledge attempt to configure Comm-Stor II.

After the chapters on configuration, instructions are provided on the creation of both Refresh and User diskettes.

2. THE MEMORY ORGANIZATION OF Comm-Stor II

Before proceeding with the configuration process, it is important to understand the different types of memory employed by Comm-Stor II and what information is contained in each type. Comm-Stor II's memory falls into two general categories: internal and external.

A. Internal Memory Organization

Comm-Stor II utilizes two types of electronic (semiconductor) memory to store information internally: (1) System Memory and (2) Configuration Memory. The contents of System Memory are preset at the factory and may not be altered by the user. This memory contains the information Comm-Stor II needs in order to perform its many functions. (If Comm-Stor II had been designed for one specific application and it was never necessary to reconfigure the unit, System Memory would be the only required internal memory.) The information stored in System Memory, however, has been designed to make decisions based on operator requirements. When the system senses a situation which requires a decision, it reads the contents of another memory, called Configuration Memory, to determine what course of action to take. The contents of this memory is specified during the configuration process.

*Henceforth, in this manual for the reader's convenience, the Comm-Stor II Communications Storage Unit will be referred to as the Comm-Stor Unit or simply Comm-Stor.

Configuration Memory is specially designed to save stored information when Comm-Stor II is powered off. This is accomplished by providing a small battery within Comm-Stor II which will retain the information in the Configuration Memory for at least one year. Whenever Comm-Stor II is powered on, this long life alkaline cell is constantly under a trickle charge. If Comm-Stor II is powered off for more than one year, or if during some maintenance procedure the battery is temporarily disconnected from the memory elements, a reconfiguration of Comm-Stor II will be required.

B. External Memory

In addition to the System and Configuration Memories, Comm-Stor II utilizes diskettes to store system information externally. Refer to Figure #1-1 for the format of a standard Comm-Stor II diskette. There are three types of diskettes used with Comm-Stor II: (1) Configuration diskettes, (2) Refresh diskettes, and (3) User diskettes.

Configuration Diskette

The Configuration diskette contains a special procedure which allows the operator to (1) configure Comm-Stor II, (2) create a diskette having a copy of the Configuration Memory and (3) create User diskettes on which user files are stored. The Configuration diskette is supplied by Sykes Datatronics, Inc. and cannot be duplicated on a Model 8220A dual drive system. Its only purpose is to configure Comm-Stor II and generate Refresh and User diskettes. Data files are never stored on the Configuration diskette.

Refresh Diskette

A Refresh diskette contains a *copy* of the information stored in Configuration Memory. This provides the operator with a rapid means of changing the configuration of a Comm-Stor II unit without going through the step-by-step configuration process. A CONFIGURATION diskette is normally used to configure new systems or to reconfigure systems after maintenance. Those operators who wish to use Comm-Stor II with a variety of data systems can keep a library of Refresh diskettes enabling them to reconfigure Comm-Stor II in seconds when changing from one system to another. The operator may use one Refresh diskette to configure Comm-Stor II to recognize commands convenient to the operator and another to recognize commands more commonly used for communicating with a computer. For example, the .DD command for Display Directory is convenient for an operator; however, a computer may wish to use a control code for the same function. Any number of Refresh diskettes may be created by using the Configuration diskette. Operator files are never stored on a Refresh diskette. Refresh diskettes cannot be copied in a Model 8220A dual drive system.

Comm-Stor II User Diskettes

FIXED LENGTH FILES

In addition to data files, Directory and optional scratch pad area, User Diskettes contain information about the nature of the files themselves and the manner in which they will be stored. This allows the operator to rapidly change file characteristics without having to reconfigure (or refresh) the system. Because the files stored on a diskette containing fixed length files will have the same maximum length, it is often desirable to have a library of diskettes, each designed for different file lengths. This allows for more efficient use of the available diskette space by avoiding storage of short files in long file slots. The file parameters stored on the fixed length file User diskette are as follows:

1. Maximum number of files that can be stored on this diskette
2. Maximum number of sectors for a file
3. Maximum number of characters in a file name
4. Maximum number of characters in a file name extension
5. Maximum numbers of characters per line.
6. Maximum number of lines of text which may be stored in the scratch pad area

VARIABLE LENGTH FILES

In addition to handling Comm-Stor II fixed length User diskettes, Comm-Stor II has the capability of generating User diskettes which have a variable length file format. This feature allows the operator to store large and small files on the same

diskette in a very efficient, back-to-back format. The file parameters required for the variable length User diskette are the same as for the fixed length User Diskette with the exception of "Maximum number of sectors for a file". This is not specified when a variable length file User diskette is created. The parameter is not stored on the User diskette because the variable length User diskette allows each file's capacity to vary every time a file is stored.

It should be noted that one sector is equivalent to 128 characters of storage space. Variable Length Files always require the entire last sector in the data file even if the last sector is only partially filled. For this reason, the smallest data storage unit on a diskette is always at least 1 sector.

Detailed explanations of these parameters and general guidelines for their selection will be presented in Chapter 13 entitled "Creating User Diskettes." User diskettes are created by using the Configuration diskette and may be copied in a Model 8220A dual drive system.

Comm-Star II Diskette

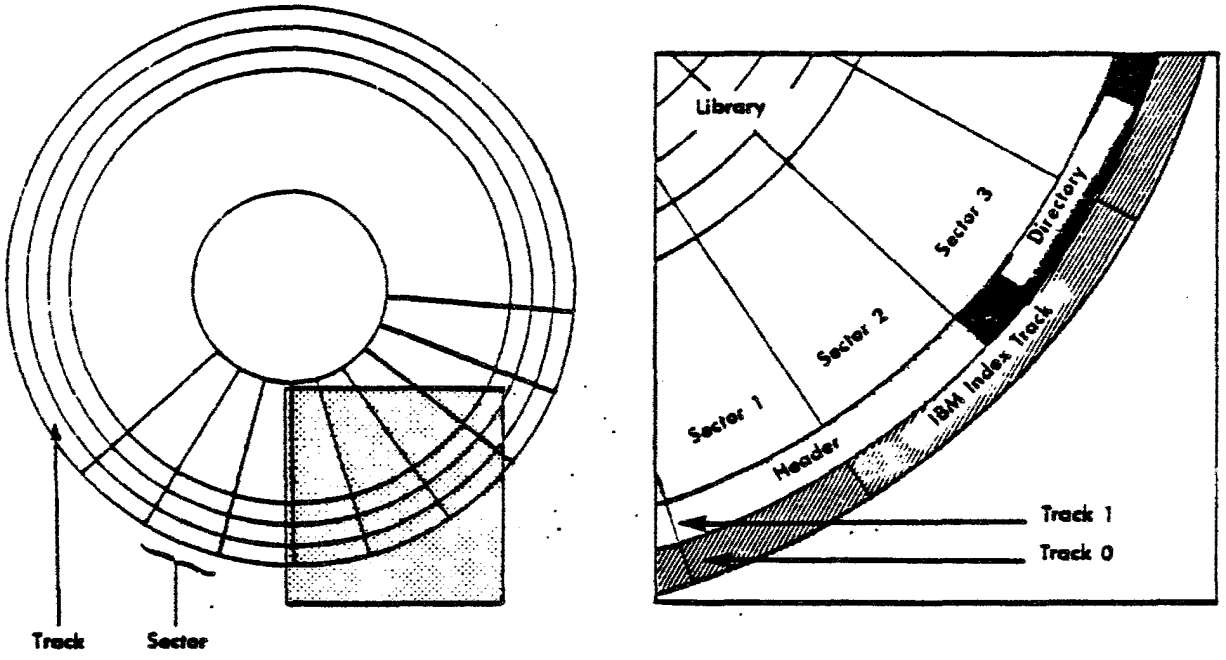

FIGURE #1-1

CHAPTER 2

PREPARATION FOR CONFIGURATION

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1. EQUIPMENT SET UP PROCEDURE

Comm-Stor II operations usually require a terminal capable of operating in the Full Duplex mode to be connected to the terminal connector (port) on the rear panel of Comm-Stor II. However, the Dataspeed®40/1 Terminal equipped with the S/R option is supported in Comm-Stor II systems when a Revision B (or higher) Configuration diskette is used. The terminal must be capable of operating at one of the transmission rates (baud) shown in the table on the rear panel of Comm-Stor II. The operator should set the terminal port baud setting switch to the proper position for the transmission rate of the particular terminal in use. Several other transmission rates are selectable only through keyboard commands and are not shown on the BAUD RATE label. Note that the Configurator will not function properly if the terminal baud setting switch is in position 0 (KYBD position).

The Configurator determines character length and parity convention by examining the modem baud setting switch on the rear panel of Comm-Stor II. The operator sets the ***modem transmission rate*** switch according to Table #2-1 to match the characteristics of the ***terminal*** in use.

If positions 2 or 5 are selected, Comm-Stor II ignores the parity bit on incoming data from the terminal and deasserts (sets to zero) the parity bit for outgoing data to the terminal. If position 6 or higher is selected, the front panel lights will flash randomly.

Position 0 7 bits + even parity
Position 1 7 bits + odd parity
Position 2 7 bits without parity
Position 3 8 bits + even parity
Position 4 8 bits + odd parity
Position 5 8 bits without parity
Position 6 or higher—invalid

TABLE #2-1

During configuration, all output is sent simultaneously to the terminal and printer ports. The following should be noted:

1.) If the printer is running at a lower baud rate than the terminal, the terminal will automatically be slowed to maintain synchronism.

2.) If the printer port option is not installed, the printer baud rate switch (if installed) ***must*** be set at zero. If not, the system will not operate and only a single carriage return will be sent to the terminal.

3.) The parity and character length specified by the modem baud rate switch applies to both the terminal and printer ports. Therefore, the parity and character length of these devices must be the same.

On-Line Setting

The operator should be certain at this time that the terminal is placed in the on-line condition. All conversation with Comm-Stor II takes place with the terminal on-line. Before proceeding, be certain that Comm-Stor II is powered on. NEVER INSERT DISKETTES WHEN Comm-Stor II IS POWERED OFF OR IN STANDBY MODE!

Place the Configuration diskette in Drive 1 (upper drive on Model 8220A), close the door, and depress the RESTART switch. If either the terminal or modem baud setting switch is incorrectly set, meaningless characters will probably be displayed at the terminal. The operator should recheck the position of the baud setting switches and consult the terminal manual to determine what these settings should be.

If a printer is connected to the printer port, the respective baud rate switch should be set to match the printer speed. All transactions entered at the terminal will be output to the printer. If the printer port baud rate switch is set to zero, data will not be output through the printer port.

If the switches are correctly set and the terminal is functioning correctly, the Configurator will type an identification message followed by:

PLEASE TYPE FRAMING CHARACTER:

If this message* is not obtained, a malfunction of either Comm-Stor II or the terminal is probable. Recheck the terminal to be sure it is in the on-line mode. Since Comm-Stor II assumes the terminal is always ready, a DTR signal will be ignored by the Configurator if one is sent by the terminal.

A random flashing of the front panel lamp indicates an invalid setting of the modem baud rate switch. No response at all can also be caused by an incorrect setting of the printer port baud rate switch. In either case, review the Equipment Set-Up procedure.

2. CONFIGURATION PROCEDURE

Note: This manual assumes that a Full Duplex terminal is being used during configuration. However, the Configuration diskette will automatically sense when a Dataspeed 40/1 terminal is in use. The operation will be notified to accommodate this terminal. The following points should be noted:

1.) The Dataspeed 40/1 must have the S/R option installed.

2.) All operator responses must end with a Carriage Return.

3.) Some input text will appear double spaced on the screen during entry, but when a configuration is listed, the output will be single spaced.

4.) It is not possible to type characters while data is being output by Comm-Stor II. Therefore, the INTERRUPT key must be used (instead of Control T) to terminate an output operation.

5.) Some control codes are inconvenient or impossible to enter through the Dataspeed 40/1 Terminal keyboard. It is recommended that the following codes be entered in binary form (1's and 0's) as described later in this section:

CR	/00001101/	BS	/00001000/
LF	/00001010/	FF	/00001100/
ETX	/00000011/	DC2	/00010010/
EOT	/00000100/	DC4	/00010100/
HT	/00001001/		

*Configurator Version B or higher (i.e. Version C, etc.) may be used with this manual.

After the Configurator's identification message and the request for framing character are displayed, the operator enters a single character. This character is used before and after operator responses to configuration questions and precisely defines where the response begins and ends. Any character is acceptable; however, the character which is chosen cannot be part of any operator reply during the configuration process. The customary selection at this point is the slash (/), which means that no system command may be defined which contains a slash. For example: (.DD) may not be reconfigured to(/DD). If the selected framing character conflicts with a system command character, the operator may depress the RESTART switch to restart the Configuration process and select another framing character.

Configuration Commands

When the framing character is entered, the Configurator prompts the operator by typing a period. The operator responds by entering one of the available commands listed in the table below depending on which operation the Configurator is to perform. Either upper or lower case letters may be entered. The first five commands require an End of Line character [EOL] (this may be a Return, Line Feed, New Line, Escape or any control code) before the command is sensed by Comm-Stor II. The rest of the commands are sensed immediately after the key is struck at the terminal. The underlined portion of each command indicates entries made by the operator; the leading period is a prompt from Comm-Stor II.

Configuration Commands

.C[CR]	Configure all parameters
.D[CR]	Display all parameters
.Cnnn[CR]	Configure parameter nnn

.Dnnn [CR]	Display parameter nnn
[CR]	Configure/Display next parameter
:	Configure/Display SAME parameter
.B	Build User Diskettes—(Chapter 13)
.W	Write System Refresh Diskette (Chaper 12)
.R	Standard Factory Refresh (Chapter 14)
.[⌃T]	Terminate current operation; return to period prompt (The INTERRUPT key may be used on a Dataspeed 40/1 terminal.)
.G	Activate Forms Generation Procedure. (Not covered in this manual.)

Note: The (⌃) is used to indicate the Control characters.

When configuring or displaying parameters, Comm-Stor II displays the following information:

nnn:parameter title (current value)

where nnn is the number of the particular parameter (001 or 1). If a .C command is entered, Comm-Stor II will pause after typing the current parameter value. The operator has the option of accepting the command configured as is or changing it. To change the parameter value, the operator types the framing character, the new value and then the framing character again. To accept the command as is, the operator types any character, usually a Carriage Return. The next parameter will then be displayed.

There are several types of parameters, most falling into two groups: YES/NO parameters concerned with the availability and use of certain features, and single character parameters. When displaying or configuring a YES/NO parameter, the current value is displayed as YES or NO. If the operator wishes to change the value, the new value is entered as a Y or N placed between framing characters. Comm-Stor II will accept an upper or lower case entry for Y or N responses.

Example: /Y/ ***Do not*** enter the full words YES or NO!

When configuring or displaying a parameter which is printable, Comm-Stor II displays the current value of the parameter as the character itself. In the case of nonprintable characters, the current value is shown in an interpretive mode. For example:

Control G = ([⌃G])
Carriage Return = ([CR])
Control C = ([ETX])

Note that the interpretive representation is used only by Comm-Stor II as a means of printing a nonprinting character. The operator always strikes the single key corresponding to the desired character.

If the operator wishes to configure a single character parameter to a character that is unavailable on the keyboard (perhaps a lower case letter on an upper case only keyboard), the character may be entered using the Binary Data feature as follows:

1. Enter the command .Cnnn. Comm-Stor II will type the parameter's title and correct value.
2. Set the BINARY DATA switch to the ENTER position.
3. Type the framing character.
4. Type one to eight binary digits ("1"s and "0"s). Most significant bit first.
5. Type the framing character.
6. Set the BINARY DATA switch to the EXIT position.

Comm-Stor II will echo the entered information both in binary (as entered) and as an interpreted ASCII character as described above.

Some of the configuration parameters require SPECIAL RESPONSES from the operator. These responses are discussed as they are encountered in the parameter explanations.

All commands used to display and configure parameters pause after typing the current value to allow an operator response. The only exception to this is the .D command which causes all parameters to be displayed sequentially with no pauses. This command is intended mainly to allow an operator to list all configurable parameters to determine the number of a desired parameter. The .B, .R, and .W commands do not apply to the standard configuration process and are discussed in later chapters.

The next nine chapters will discuss the configurable parameters individually and the order in which they will appear on the terminal during the configuration process. The nine chapters correspond to nine functional groups of parameters as follows:

System Parameters
Terminal Port Parameters
Modem Port Parameters
Printer Port Parameters
Standard System Commands
File Editing Parameters
Standard Forms Parameters
Answerback/User Command Table Parameters
Extended Forms Parameters

Except where specifically noted, all operator responses to questions asked by the Configurator are assumed to be standard ASCII characters. Printable characters will be represented in the text by the actual letters enclosed within quotes or parentheses.

CHAPTER 3

SYSTEM PARAMETERS

CONTENTS PAGE

1. SYSTEM DESCRIPTION

Parameter #1—ASCII Data?

The standard response is Y.

This parameter is included mainly for future expansion. Those operators having special versions of Comm-Stor II requiring a response of N will be told to do so in their special Reference Manual. It is important to note that a response of N does not mean that Comm-Stor II will be totally ASCII independent. For example, all system error messages are output in ASCII characters regardless of the response to Parameter 1.

2. DATA TERMINATORS

Parameter #2—Send EOT After Each Modem Request

The standard response is N.

If the operator responds with a Y, Comm-Stor II will send an End of Transmission character (Parameter #11) upon completion of any terminal, modem, or printer operation which was initiated through the modem port.

For example, if the remote device sent the command:

.PD *

the directory would be printed at the local printer. Upon completion, the configured EOT character would be sent back to the remote device indicating to the remote operator that the PRINT Operation had taken place.

The EOT response does not imply successful completion of the command. If an error occurs in the requested operation, the EOT character will still be sent to the remote device. Therefore, the remote device should be configured to recognize error messages or numbers and Comm-Stor II should be configured to send error messages out the modem port (Parameter #21, 22).

Parameter #3—"End of Line" Character

The standard value is [CR].

This parameter specifies that character to be used by Comm-Stor II to indicate the END OF LINE condition when outputting data, and also, the character to be used by external devices to indicate END OF LINE to Comm-Stor II. This character applies to all ports: terminal, printer, and modem.

Parameter #4—System to Add Line Feed After Carriage Return

The standard response is Y.

This parameter specifies whether Comm-Stor II should echo the configured Line Feed character (Parameter #5) whenever the configured End of Line character (Parameter #3) is entered from the terminal. The added line feed applies only to data being echoed. The Line Feed is not stored on the diskette.

In most applications, the terminal and operator expect both a carriage return and a line feed when the carriage return key is depressed; therefore, the standard response for this value is "Y".

In modem communication, if the system is configured to add a Line Feed, the Line Feed character normally will not be added to data output through the modem port because remote computers usually expect only a carriage return and add the Line Feed to the Echo.

If the remote device does not echo back to Comm-Stor II, the "ECHO MODE" (.EM[CR]) is provided to create an artificial Local Echo of all terminal/remote device communication.

If Parameter #4 is configured "YES", the Echo Mode causes line feeds to be added to each line sent out the modem port. This is because Comm-Stor II asumes that if a remote device doesn't echo, it probably isn't a computer, and such remote devices require the line feed to be added. This applies to remote devices such as a terminal, printer, or another Comm-Stor II.

If the Echo Mode is desired but the resulting added line feeds are not, Parameter #143 may be configured to "strip" off the line feeds prior to transmission.

Parameter #5—"Line Feed" Character

The standard value is [LF].

This parameter specifies which character will be interpreted as a Line Feed by Comm-Stor II on incoming data and issued as a Line Feed character when outputting data. This will also be used as the added Line Feed (Parameter #4).

Parameter #6—"Carriage Return" Character for System Messages

The standard value is [CR].

This parameter specifies the character that will be output by Comm-Stor II after system messages to cause a CARRIAGE RETURN operation at the terminal device.

Parameter #7—"Line Feed" Character for System Messages

The standard value is [LF].

Similar to Parameter #6 but specifies the character used for Line Feed.

Parameter #8—"End of Text" Character

The standard value is [ETX].

This parameter specifies the character to be used by Comm-Stor II to indicate END OF TEXT, and is interpreted as an End of Text character by Comm-Stor II on incoming data. When creating files in the Enter Mode or in adding lines of text to the scratch pad buffer via the editor, this character is entered by the operator to tell Comm-Stor II that all the text has been entered and another system command will be issued. Comm-Stor II may be configured to transmit this character as the last character of the message (during a Send operation) or to suppress it. This is specified in Parameter #9. Note that this character occupies a character space in the file even if it is nonprinting.

Parameter #9—Transmit "End of Text" Character?

The standard response is N.

Comm-Stor II stores an [ETX] at the end of each file on the diskette (included in the character count). If the operator responds with a Y, the [ETX] will be transmitted at the end of ASCII files.

Note: Files entered in the BINARY mode will not be transmitted with the [ETX] attached.

Parameter #10—Transmit "End of Transmission" Character?

The standard response is N.

If the operator responds with a Y, Comm-Stor II adds an End of Transmission character on completion of any SEND operation (e.g., SEND STATUS, SEND DIRECTORY, SEND FILE).

Parameter #11—"End of Transmission" Character

The standard value is [^D].

This parameter specifies the character to be used as END OF TRANSMISSION in the above operation.

3. SYSTEM CONTROL CHARACTERS

Parameter #12—"Reset" Character

The standard value is [^T].

The RESET code (character) may be input to Comm-Stor II from either the modem or terminal port.

When in Extended Forms mode, a [^T] will save all variable data up to but not including the current page. The file will only be written in the amount of disk space required for the file, and not take the remaining free space.

When a [^T] is received, the current operation is terminated and the equipment returns to an idle state and awaits further system commands. An input operation which has not been permitted to progress to its normal completion will suffer a loss of data as a result of the RESET. For example, an ENTER operation which was interrupted by a RESET will result in no file data being entered. If the file name appears in the Directory, the file itself will not contain any characters. However, the terminated file will occupy the rest of the diskette and a "Full Disk" message will be generated when trying to store the next file. A RESTORE (.RE) or CANCEL (.CN) command will then be required to make the rest of the diskette available for use.

In an ENTER AUTOMATIC operation, even though Comm-Stor II has returned to idle condition, the RESET code does not clear the current extension nor does it clear the current file name to be used.

Parameter #13—"Space" Character for System Messages

The standard value is a [SPACE] character.

This parameter specifies the character to be used as a separator between characters and words in system files. An example is the space character which separates the file names and extensions when listing the Directory.

Parameter #14—First Character of Escape Sequence

The standard value is an [ESC].

This parameter specifies the character used to initiate an ESCAPE sequence. ESCAPE sequences consist of an Escape character (which serves as an alert to a remote computer) followed by a second character which specifies why the alert was issued. This may be used to initiate a STOP SEND/START SEND operation where Comm-Stor II can prevent a remote computer from sending data too rapidly for Comm-Stor II to accept (see Parameter #16).

Parameter #15—"Parity Error" Symbol

The standard value is (?).

When Comm-Stor II receives a character with a parity error, it will most likely be displayed as a different character or be transformed into a non-printable character and not displayed at all. This parameter will configure Comm-Stor II to substitute a specific symbol for any character which is received with a parity error at the terminal and/or the modem port. The same symbol will be substituted in both cases. The parity error will also cause the STATUS indicator on the front panel to be illuminated. In addition, framing errors can be interpreted similarly as a parity error. This is specified in Parameter #55.

4. TRANSMISSION CONTROL PARAMETERS

Parameter #16—"Stop Send/Start Send" Option

The standard response is (0).

This parameter controls Comm-Stor II's ability to request a remote location to temporarily stop transmitting data.

Acceptable responses are values 0, 1, 2 or 3 (numeric characters). The choice here may require the assistance of a representative of the data system Comm-Stor II is to be used with. The four different possibilities are explained below:

0. Comm-Stor II will never request the remote device to stop transmitting.

1. (Useable with Full Duplex modems only) Comm-Stor II will transmit STOP SEND and START SEND characters. These characters will automatically be sent when Comm-Stor II senses that data is being sent to it faster than its ability to receive the data. These characters are specified in Parameters #17 and #18.

2. (Useable with Full Duplex modems only) Comm-Stor II will operate as above except that the configured Escape character is transmitted before the Stop Send and Start Send characters. This is applicable to those computer systems set up to handle ESCAPE sequences.

3. (Useable with Half Duplex modems only) When data is sent to Comm-Stor II faster than its ability to receive the data, Secondary-Request-to-Send will be lowered. If Comm-Stor II is configured for Modem Port Input Buffering, it will request the remote device to stop transmitting when the buffer lever reaches 50% of the configured buffer size (Parameter #144). When the buffer is reduced to a level fixed at 256 characters, Comm-Stor II will request the remote device to resume transmitting.

Parameter #17—"Stop Send" Character (To Computer)

The standard value is [^S].

This parameter specifies which character will be used by Comm-Stor II to request the remote computer to stop sending. This parameter only applies if the response to Parameter #16 was either 1 or 2.

Parameter #18—"Start Send" Character (To Computer)

The standard value is [^Q].

This parameter specifies the character used by Comm-Stor II to request that the remote location resume sending after a STOP SEND was issued. This parameter only applies if the response to Parameter #16 was either 1 or 2.

Parameter #19—"Hold" Character (From Computer/Terminal)

The standard value is [^S].

CHAPTER 4

TERMINAL PORT PARAMETERS

CONTENTS PAGE

1. OPERATIONAL FEATURES

This group of parameters deals with the enabling and disabling of specific operational features of Comm-Stor II and also the selection of characters used to access these features.

A. Line Editing

Parameter #27—"Delete" Character Entered

The standard value is [RUB].

This parameter defines the character which will be used to remove incorrectly entered data, ***character by character***, from the current line being entered. Whenever this character is entered from either the terminal or the modem port, the character which was entered immediately before it is removed from the input character string. (A Backspace key may be available on a CRT terminal which may be the operators preferred selection.)

Note that this command may be entered as many times as necessary to backspace through any number of erroneous characters. It is only effective, however, on the current line of text being entered: once an END OF LINE character has been received, that line is stored in its current form. The EDIT option is required to alter lines of data which have already been stored.

Parameter #28—"Delete" Character Echoed

The standard value is [BS].

When the Delete character specified in Parameter #27 is entered, either the same character or a different character may be echoed by Comm-Stor II to the terminal. When a Rubout character is entered, the conventional echoed character is a [BACKSPACE] over the erroneous character, which tells the terminal operator that a previous character has been removed. (Note that the Rubout character itself is nonprinting.)

Parameter #29—"Line Cancel" Character

The standard value is [^X].

This character is used to completely cancel a line of data which has not yet been terminated by an End of Line character. The printhead or cursor is returned to the beginning of the line and, if Comm-Stor II is configured to add a Line Feed (Parameter #4), the paper or cursor advances to the next line.

B. Page Mode Operation

Parameter #30—Number of Lines on Page

The standard value is "23" which is the number of lines that can be held on many of the available CRT terminals.

The purpose of specifying the size is to permit Comm-Stor II to output only one page of data at a time so that the page may be manually advanced or a new form placed in the terminal.

Parameter #31—Stop Display After Each Page?

The standard response is N.

This parameter specifies whether Comm-Stor II is required to stop outputting data to the terminal port after each full page or complete file has been displayed.

A Y response will cause Comm-Stor II to pause, then advance to the next page after the operator strikes any key at the terminal. Regardless of the point at which the key is struck, Comm-Stor II will stop outputting data only when the end of the page has been reached. If a key is struck prior to Comm-Stor II stopping at the end of the page, Comm-Stor II will no longer pause for paging until the end of the present operation.

If this parameter is configured YES and a DISPLAY command is entered, the read/write head will remain loaded and stationary on the disk until:

1.) the operator strikes any key on the terminal advancing the head to the next page location.
2.) the last page (file) is displayed.
3.) the configured Reset character is entered.

CAUTION: IF THE READ/WRITE HEAD REMAINS LOADED AND IN ONE POSITION ON THE DISKETTE FOR AN EXTENDED PERIOD OF TIME, DAMAGE TO THE DISKETTE AND HEAD MAY RESULT.

C. Operator Alerts

Parameter #32—Substitute Terminal Parity Errors With "Error" Symbol?

The standard response is Y.

When a parity error occurs in the transmission of a character from the terminal to Comm-Stor II, it is highly probable that the character will be stored and/or sent to the modem incorrectly. This parameter specifies that instead of storing and/or transmitting the erroneous character in its actual form, Comm-Stor II should substitute the parity error symbol specified by Parameter #15 in its place. The purpose of making this substitution is to provide a noticeable visual alert that an error has taken place. The substitution will be unconditional, and the error will be sent to the original destination of the erroneous character, including the diskette.

Parameter #33—Modem "Off-Line Alert" Character

The standard value is [^G] which rings the bell on most terminals.

The character specified by this parameter will be echoed back to the terminal whenever the operator attempts to output data to the modem at a time when the modem is not ready (Data Set Ready not asserted). Aside from indicating that the operator's modem is in a not-ready condition, this audible alert performs a second very important function. In a stand alone situation with a Comm-Stor II and a terminal with the modem either disconnected or off-line, the operator is immediately notified if a character is accidently inserted in the first position of a line which is not a valid system command character. For example, if the operator entered:

␣.DD * (␣ = space)

the operator would expect the diskette Directory to be displayed in its entirety. However, since the space was typed as the first character of a line and not the dot, Comm-Stor II would not interpret this entry as a valid system command but rather as data intended for the modem port. The operator would not get the expected response at the terminal and would receive no explanation as to why. The bell immediately indicates to the operator that Comm-Stor II was expecting to receive a system command

and did not get a valid one. This will not occur when the operator is entering a file or adding data to the scratch pad via the Editor. Data is never passed to the modem during these operations.

D. Terminal Echo

Parameter #34—Inhibit Echo to Terminal?

The standard response is N.

This parameter specifies that Comm-Stor II should never echo characters entered from the terminal back to the terminal. The echo should be inhibited when batch-type terminals are used in a line or page batch mode. In this mode of operation, the data is prepared on the screen with the terminal in "Local" mode. Then, the contents of the line or page are sent to Comm-Stor II when the operator strikes the "Send" key. The echo should be inhibited so that additional echoed data does not appear on the screen.

Note: When Forms data entry is used, this parameter has no effect as data is always echoed to the terminal.

E. Null Character Detection

Parameter #35—Ignore "Null" Character From Terminal?

The standard response is Y.

Some terminals are designed to output a special Null character as a means of causing delays in data transmission. A response of Y will cause Comm-Stor II to ignore this special character thereby completely removing it from the input data stream. This will prevent it from interfering with the interpretation of system commands and from occurring within the body of stored files. An example of a case in which the presence of Null characters would cause a serious problem is the case in which the terminal automatically inserts a Null character after a Carriage Return to cause a one-character delay at the end of each line. The result would be as follows: since the Null character appeared immediately after a Carriage Return, it would be placed as the first character of the next line, thus making it impossible to enter a valid system command.

Parameter #36—Terminal "Null" Character

The standard value is [NULL].

This parameter specifies which character Comm-Stor II will interpret as a Null character from the terminal as defined above.

2. HARDWARE INTERFACE PARAMETERS

This group of parameters specifies the character data format to be expected from the particular terminal in use and allows Comm-Stor II to configure its data transmitter and receiver at the terminal port.

Parameter #37—Normal Terminal Data

The standard value for parity is NONE.

The standard value for the number of bits is "8".

The standard value for the 8th bit is "0".

This parameter allows the operator to set parity at Comm-Stor II's terminal port to match the requirements of the terminal being used. Three fundamental questions are asked regarding terminal data:

1.) Parity,

2.) Number of Data Bits including an additional fixed 8th bit, and

3.) The value of the 8th fixed bit if it is used. It therefore will be necessary for the operator to know what the requirements are for the specific terminal in use.

Question #1—PARITY? The operator may select even, odd, or no parity by entering a letter E, O, or N, respectively between two framing characters.

Question #2—NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY)?

Valid selections include 5 through 8, inclusive (enclosed by 2 framing characters). If a fixed 8th bit is desired, it should be included in this figure; parity should not be included.

Question #3—EIGHTH DATA BIT?

Either a 1 or a 0 (enclosed by two framing characters) may be selected. A 1 will cause the 8th data bit to always be asserted; a 0 will cause the eighth data bit to always be de-asserted. This question will not be asked if the number of data bits is less than eight or if the system is specified as non-ASCII.

Parameter #38—Binary Terminal Data

The standard value for parity is NONE.

The standard value for number of data bits is "8".

Parity and number of data bits are selected as with Parameter #37 above. The question EIGHTH DATA BIT is never asked for binary terminal data.

Parameter #39—Terminal Interface Control

—40/1 Terminal?

Terminal Interface Control

When Comm-Stor II is powered on, all EIA Interface signals at the terminal port are initialized to their "normal" state as specified by this parameter. The operator may specify the state of five of the outgoing (Comm-Stor II asserted) control signals:

1.) Clear to Send

2.) Data Set Ready

3.) Carrier Detect

4.) Secondary Carrier Detect

5.) Ring Indicator

The standard value is:

/11110/ where 1 2 3 4 5 Signal
1 1 1 1 0 Bit Position

If the standard values must be changed, the operator should enter a "1" to assert the corresponding signal or a "0" to de-assert it. The "1"s and "0"s are entered consecutively (no blanks) from left to right in the above order. Example:

/11000/

will assert CTS, DSR, and de-assert CD, SCD, and RI. Leading zeros are assumed.

/1/ = /00001/

40/1 Terminal?

The standard response is N.

This parameter supports the Half Duplex 40/1 terminal device with S/R installed. The terminal CTS and CD lines become dynamic in this mode to support the 40/1 terminal.

Note: When using a 40/1 terminal, all entries must start at the beginning of a line and end with a Carriage Return. To terminate a display operation:

1.) Depress the Interrupt key

2.) Enter New Line, [-T], and Carriage Return

3.) Depress the Interrupt key again to release the interrupt condition

Parameter #40—Does Terminal Provide "Data Term Ready"?

The standard response is N.

This parameter specifies to Comm-Stor II whether or not it should examine the DATA TERMINAL READY signal from the terminal and output data to the terminal. If the operator specifies N, Comm-Stor II will ignore this signal and always assume that the terminal is ready. The feature permits the use of terminals which do not provide this signal. However, it is possible under these conditions for Comm-Stor II to output information to the terminal port blindly, receiving no indication that the terminal may be disconnected or inoperative.

3. TECHNICAL NOTE: PREVENTING LOSS OF CHARACTERS AT TERMINAL

Some printing terminals require an added length of time to process CARRIAGE RETURNS and LINE FEEDS. The extra time required to process the CR and LF can cause data overruns to occur at the printer or terminal.

Using Parameter #23, Comm-Stor II may be configured to insert a time delay in its transmission

to a terminal device. In this case, the time delay should be triggered on the Carriage Return or Line Feed and the amount of time delay should be adjusted for transmission without loss of characters.

Note: If the time delay is set to a value longer than necessary, an objectionable delay will occur at the end of each line displayed at the terminal.

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CHAPTER 5

MODEM PORT PARAMETERS

CONTENTS PAGE

This chapter contains parameters normally associated with the modem port. They are divided into two major categories: (1) Operational Features and Column List Format and (2) Hardware Interface Parameters. A basic description of Full and Half Duplex Modem Operation is provided in Appendix I.

1. OPERATIONAL FEATURES

These parameters are concerned with the selection of operational features of Comm-Stor II as well as the characters used to access these features.

A. Half Duplex Modem Control

Parameter #41—Half Duplex Modem?

The standard response is N.

Respond with a Y if a Bell 202 type Half Duplex modem is used. Respond with an N if a Bell 103 or 212 type Full Duplex modem is used.

Parameter #42—""For Half Duplex Only""—Turn Around Line After Every Character?

The standard response is Y.

This parameter applies only to conversational data sent from the terminal, through Comm-Stor II, to the modem. Comm-Stor II will assert the Request to Send signal at the modem port prior to sending the first character. During transmission, any time a pause which exceeds the time limit specified in Parameter #45 occurs in the data, RTS will be deasserted. When the next character enters the terminal port, the cycle will repeat. This enables the remote device to turn the line around during the pause. This is useful with systems in which no single, unique turn-around character can be defined. When a batch mode terminal is used, RTS will remain asserted for the duration of the block (Screen) transmission. This ensures that no gaps will occur.

This parameter has no effect on the transmission of diskette files. RTS always drops 1.25 character periods (based on transmission rate) after the last character of a diskette transmission.

Note: When operating in isochronous mode, Parameter #43 determines when the line is to be turned around but Parameter #45 establishes the RTS time out period.

Parameter #43—""For Half Duplex Only""—Modem "Turn Around" Character

The standard value is [CR].

When it is desirable to permit a LINE TURN AROUND whenever a specific character is transmitted out the modem port, this parameter may be used to specify that character. After this character is transmitted, Comm-Stor II will drop REQUEST TO SEND to the modem. A remote device may then transmit data to Comm-Stor II by asserting its REQUEST TO SEND (and receiving a CLEAR TO SEND back from its modem). Although any character may be used as a Modem Turn Around character, the most common are perhaps an END OF LINE character and an END OF TEXT character. These permit communication from the remote device to Comm-Stor II after each line or each block of data respectively. Note that once Comm-Stor II drops REQUEST TO SEND, the system is subject to an inactivity time out (if enabled) which is specified by Parameter #57.

Parameter #44—""For Half Duplex Only""—Secondary (Supervisory) Channel Available?

The standard response is N.

Many data systems using 202 type modems use the secondary channel as a means of starting and stopping data transfers from devices such as Comm-Stor II to the host computer. This channel may also be used to interrupt Comm-Stor II when a data overrun condition has occurred at the computer. When this channel is available in normal operation, the transmitting device sends data via the primary channel and expects to see a secondary channel signal (Secondary Carrier Detect) coming back. If the supervisory channel is available and used in this manner, Comm-Stor II may be configured to look for the supervisory channel by specifing Y. The action Comm-Stor II will take if the Secondary Carrier Detect signal is lost is specified by Parameter #46.

A Y response will also cause Comm-Stor II to raise Secondary Request to Send at the modem port. This signal will be lowered only by a buffer "back-up" condition (see Parameter #16) or a "break" condition on pin 3 of the terminal port.

Parameter #45—""For Half Duplex Only""—"Request to Send" Time Out (Milliseconds)

The standard value is 200.

This parameter specifies how long Comm-Stor II will wait after sending a conversational character before actually de-asserting the REQUEST TO SEND line. This delay period only applies when Comm-Stor II is configured to turn the line around after every character. It is recommended that this delay be set to at least *three times* the duration of a transmitted character (this is a function of the transmission rate selected) to avoid the possibility of dropping REQUEST TO SEND too early and thereby cutting off part of the character as it is transmitted. This delay period is expressed in milliseconds and may be specified as any number between 1 and 255. If zero is specified, a value of 255 will actually result.

Parameter #46—"For Half Duplex Only"—"Secondary Carrier Dropped" Option

The standard response is 0. Acceptable responses are the values 0 through 2, inclusive.

If Comm-Stor II is configured to examine the Secondary Carrier Detect signal, as found on a 202 type modem (see Parameter #44), that course of action which Comm-Stor II should take if the Secondary Carrier Detect signal is lost during a transmit (S, SS or SD) operation must be specified.

Comm-Stor II will respond according to the following table:

Batch Mode:

0—Ignores loss of Secondary Carrier; continue transmitting

1—Reset system (possible data overrun). This occurs only during a SEND operation.

2—Stop transmitting until Secondary Carrier Detect is reasserted by the remote unit. The standard value for this parameter is zero.

Conversation Mode:

0—Ignores loss of Secondary Carrier; continue transmitting.

1—Wait for Secondary Carrier to return as follows:

a.) If sensed within 4 seconds, continue transmitting.

b.) If *not* sensed within 4 seconds, indicate ERR—MODEM and reset system.

2—Same as 1

B. Prompt Control

Parameter #47—Wait After EOL for Prompt or After ETX for ACK?

The standard response is N.

Comm-Stor II may be configured to pause during data transmission whenever a specific character is transmitted and not resume sending until another specific character has been received from the remote device. This operation can be viewed as either line-by-line prompting or ACK/NAK* operation depending on what character is chosen to initiate the wait period.

To implement line-by-line prompting, Comm-Stor II may be configured to wait for a prompt after each END OF LINE character is transmitted. This is useful for applications where the remote computer requires some time to process each line of data and cannot accept a new line until the previous one is completely processed. See Parameter #49 for configuring Comm-Stor II to wait for a prompt for the first line of the file as well as after each line is transmitted.

Since an END OF TEXT character is always present at the end of each file, it may also be used to trigger a wait period, thereby implementing an ACK/NAK type operation on a file-by-file basis. If Comm-Stor II receives a positive ACKNOWLEDGE character (Parameter #50), it will proceed to the next file and transmit it. If a negative ACKNOWLEDGE character (Parameter #51) is received, Comm-Stor II will retransmit the previous file, and will do so indefinitely as long as the negative Acknowledge characters are received from the remote device.

Any data received at the modem port while in the WAIT FOR PROMPT state will be passed to the terminal. At this time no parity check is made and the modem NULL character is effective.

If either the line-by-line prompt or the ACK/NAK operation is desired, the operator should respond with a Y.

Parameter #48—Character to Initiate Wait Period

The standard value is [ETX].

The operator should respond with the desired character to initiate a wait for Prompt/Acknowledge.

Parameter #49—Wait for Prompt Before Starting Transmission?

The standard response is N.

In addition to waiting for a prompt character after any END OF LINE character is received,

* ACK/NAK refers to positive/negative acknowledgements.

Comm-Stor II may be configured to also require a prompt before starting transmission. These two methods of prompting are totally independent and either or both modes may be selected (see Parameter #47).

Parameter #50—"Prompt" or "Acknowledge" Character

The standard value is [␣F].

If the operator has configured Comm-Stor II to operate in the Line-by-Line Prompt or ACK/NAK Mode, respond here with the character which Comm-Stor II should interpret as the PROMPT or ACKNOWLEDGE character. Note that even though it is referred to as an acknowledge, it need not be the ASCII [ACK] character. This is, however, the standard value for this parameter.

The characters for Prompt and Acknowledge are one and the same; the character selected must always be used by the remote device to initiate further data transmissions when Comm-Stor II is in the WAIT FOR PROMPT state.

The LINE-BY-LINE PROMPT and ACK/NAK type operations are functionally different from the HOLD/RESUME described in Parameters #19 and #20. The prompting operation is triggered by specific characters in the text while the HOLD/RESUME operation is controlled by the external device. The operator may employ both of these techniques simultaneously. However, caution should be observed if Comm-Stor II is in the HOLD state and the WAIT FOR PROMPT state simultaneously. In this case, the PROMPT/ACK *and* RESUME characters must be received to continue transmitting data.

While in the WAIT FOR PROMPT/ACKNOWLEDGE state, the prompt character may be issued from the modem or terminal port. If it is received at the modem port, it will be acted on and passed through to the terminal. If it is entered at the terminal port, it will be acted on, *not* sent, and a Carriage Return and Linefeed will be echoed to the terminal.

Note: Other characters typed at this time are handled as normal conversation with the following restrictions:

1.) The Echo mode is not supported.

2.) If Comm-Stor II is configured for Half Duplex, the characters will not be transmitted.

Parameter #51—"Retransmit File" Character

The standard value is [␣U].

When Comm-Stor II is waiting for a Prompt or Acknowledge character, the remote device may cause the previous file to be totally retransmitted by issuing a RETRANSMIT FILE character specified by this parameter. This is functionally equivalent to a negative acknowledgement and although any character may be used for this purpose, an ASCII [NAK] is the standard value. Comm-Stor II will continue to retransmit the current file as long as this character is received through the modem port after transmission of the file is complete and the Comm-Stor II unit has entered the WAIT FOR PROMPT/ACKNOWLEDGE state.

C. Null Character Detection

Parameter #52—Ignore "Null" Character from Modem?

The standard response is Y.

Data systems will frequently add Null characters within a data stream as a means of generating delays in the data transfers. This is typically done after Line Feeds or Form Feeds. These characters are specifically chosen so that terminal equipment does not respond to them in any way. Respond here with a Y if such characters will be present in the data stream from the modem port of Comm-Stor II. The character itself will be specified in the next parameter.

Parameter #53—Modem "Null" Character

The standard value is [NULL].

If Comm-Stor II has been configured to ignore NULL characters from the modem port, respond here with the particular character that is to be interpreted as Null. Anytime this character is received by the modem port, it will be ignored.

This parameter is frequently used to strip control codes from the computer (such as an EOT) that might conflict with Comm-Stor II or terminal control codes.

Parameter #54—Is Attached Instruction Echoed?

The standard response is N.

This parameter is used to specify whether the remote device (computer) echoes operator commands (often issued as Attached Instructions) back to the operator. Since a certain amount of time is required to echo the commands, they will be received, either in part or totally, as the beginning of data during a receive operation such as the following:

.R MESSAGE#TYPE MESSAGE

In this example, Comm-Stor II is told to RECEIVE MESSAGE, and the remote computer is told to type MESSAGE. The Attached Instruction to the computer is sent after Comm-Stor II has prepared itself for the RECEIVE operation. If the computer echoes TYPE MESSAGE, that phrase will be interpreted as the beginning of data and will be stored and displayed with the text. If the operator responds Y to this parameter, Comm-Stor II will ignore everything up to the first END OF LINE character, thereby removing the command from the stored data. Since most time sharing remote computers echo commands, this parameter must be reconfigured to YES.

Operator Alert

Parameter #55—Substitute Modem Parity Errors With "Error" Symbol?

The standard response is Y.

The parameter is similar to Parameter #32 except that it applies to the modem port instead of the terminal. When a character is received through the modem port with a parity error, it is highly probable that it will be stored and/or displayed on the terminal incorrectly. When such an error occurs, Comm-Stor II may be configured to replace the incorrect character with an error symbol as defined by Parameter #15. This substitution provides an easily recognized visual alert during examination of the data, indicating that a transmission error has occurred. In addition to substituting this character, Comm-Stor II will always illuminate the STATUS indicator on the front panel. Turn off the indicator by issuing a RESET command.

Parameter #56—Check for Modem Framing Errors?

The standard response is N.

Comm-Stor II may be configured to either check for modem framing errors (failure to receive the proper stop bit or bits) or, to treat framing errors as parity errors. In the latter case, Comm-Stor II will respond by illuminating the STATUS indicator on the front panel and substitute the parity error symbol for the incorrect character if configured to do so (see Parameter #55).

Parameter #57—Inactivity Time Out (Seconds)

The standard value is INACTIVE.

Comm-Stor II monitors line activity by examining the Carrier Detect signal from the modem in Full Duplex. In Half Duplex, Comm-Stor II monitors carrier detect from the remote computer and its own REQUEST TO SEND for activity. If the line becomes inactive for a specified period of time, Comm-Stor II responds by issuing an internal RESET command. The system returns to the idle state and deasserts DTR causing a modem disconnect.

In Half Duplex operation, inactivity is defined as neither Comm-Stor II nor the remote device transmitting the primary carrier. In Full Duplex operation, inactivity is defined as the interruption of the carrier received from the remote device. This parameter requires a numeric response from the operator. There are two valid selections:

1) The operator may specify 0 (zero) to disable the time-out feature. This is done by typing:

   /0/ or //

   The system responds with INACTIVE. Comm-Stor II will never hang up due to inactivity.

2) The operator may specify any number of seconds between 2 and 127 by typing:

   /nnn/ where nnn is a number between 2 and 127, inclusive.

   The specified value will be typed by Comm-Stor II.

2. HARDWARE INTERFACE PARAMETERS

The parameters in this group are associated with the character format from the modem and allow Comm-Stor II to configure its internal data transmitter and receiver at the modem port to accept this format.

Parameter #58—Normal Modem Data

The standard value for parity is NONE.

The standard value for the number of bits is "8"; standard value for 8th bit is "0".

This parameter allows the operator to set parity at Comm-Stor II's modem port to match the requirements of the remote device. Three fundamental questions are asked regarding modem data: 1) parity, 2) the number of data bits including an additional fixed 8th bit, and 3) the value of the 8th fixed bit if it is used. It therefore will be necessary for the operator to know what the parity requirements are for the specific data system.

Question #1—PARITY? The operator may select even, odd, or no parity by entering a letter E, O, or N respectively between two framing characters.

Question #2—NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY)?

Valid selections include 5 through 8, inclusive (enclosed by two framing characters). If a fixed 8th bit is desired, it should be included in this figure; parity should not be included.

Question #3—EIGHTH DATA BIT? Either a 1 or a 0 (enclosed by two framing characters) may be selected. A 1 will cause the 8th data bit to always be asserted; a 0 will cause the eighth data bit to not always be asserted. This question will not be asked if the number of data bits is less than eight or if the system is specified as non-ASCII.

Parameter #59—Binary Modem Data

The standard value for parity is NONE.

The standard value for number of data bits is "8". Parity and number of bits are specified as in Parameter #58. The question, "EIGHTH DATA BIT?", is never asked for binary modem data.

Parameter #60—Does Modem Provide "Data Set Ready"?

The standard response is Y.

Respond here with a Y if the modem provides this signal. If this is the case, Comm-Stor II will examine Data Set Ready before transmitting data to the modem. For those modems which do not provide this signal, a response of N will cause Comm-Stor II to assume that the modem is always ready. With modems that do not provide the signal, it is therefore possible to accidentally transmit data out of the modem port when the modem is inoperative or perhaps not even connected. Comm-Stor II will receive no indication if this is the case.

3. ISOCHRONOUS OPERATION

A. Selecting Isochronous Operation

The isochronous mode of operation must be selected when Comm-Stor II is communicating through a synchronous modem such as a Bell 201 or 208. The modem baud rate switch must first be set to "0". This mode is selected by issuing the command:

.BM I[CR]

Data will be sent bit-synchronously (character asynchronously) under control of the modem clock. The modem must be optioned to provide a clock.

After the above command is issued, Comm-Stor II will remain in this mode even if power is removed. The operator may change the mode either by changing the modem baud rate switch or by issuing a standard .BM command with a specific baud rate specified, for example:

.BM 1200

B. Configuration

Isochronous operation is normally Half Duplex and requires a specific Line Turnaround character. This character (usually EOT) is specified in Parameter #43. In addition, the appropriate RTS timeout must be selected with Parameter #45. This parameter effects all transmissions when operating isochronously.

If a four-wire modem is used, the connection is interpreted as Full Duplex by Comm-Stor II. In

this case, Parameter #41 must be set to "NO" and #43 and #45 are ignored.

C. Operation

Isochronous transmissions are initiated the same as asynchronous transmissions. Batch transmissions will automatically have the Turnaround character added. The operator must be sure to include the Turnaround character with conversation since Comm-Stor II cannot add it.

4. TECHNICAL NOTE: PREVENTING LOSS OF CHARACTERS AT REMOTE DEVICE (MODEM)

Some remote computers require time delays between lines of data to allow the computer time to process the line.

Using Parameter #23, Comm-Stor II may be configured to insert a time delay in its transmission through the modem port. In this case, the time delay should be triggered on the Carriage Return and the amount of time delay should be adjusted for transmission without loss of characters.

Note: If the time delay is set to a value which is longer than necessary, an objectionable delay will occur in modem transmission.

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CHAPTER 6

PRINTER PORT PARAMETERS

CONTENTS PAGE

1. PARAMETERS #61-#66

The parameters in this group pertain to Comm-Stor II's optional printer port. Examine the Option label on the rear panel of the Comm-Stor II unit to determine if the printer port option is installed in the unit. During the configuration process the operator should not indicate to Comm-Stor II that the printer port is installed when it is not. If this is done, and the operator subsequently enters any of the PRINT commands, unpredictable operation could result. If this current configuration is being prepared for use in another Comm-Stor II unit (by use of a Refresh Diskette discussed on page 1-2), the operator should be sure that the information entered concerning the printer port option is representative of the actual unit in use.

Parameter #61—Printer Port Installed?

The standard response is Y.

The operator should respond with a Y if the printer port is installed and an N if it is not.

Parameter #62—Printer Data

The standard value for parity is NONE.

The standard value for the number of bits is "8"; the standard value for the 8th bit is "0".

This parameter allows the operator to set parity at the printer port to match the requirements of the printer being used. Three fundamental questions are asked regarding printer data: 1) parity, 2) the number of Data Bits including additional fixed 8th bit and 3) the value of the 8th bit if it is used. It therefore will be necessary for the operator to know what the parity requirements are for the specific printer in use.

Question #1—PARITY? The operator may select even, odd, or no parity by entering a letter E, O, or N respectively between two framing characters.

Question #2—NUMBER OF DATA BITS INCLUDING FIXED BITS (IF ANY)?

Valid selections include 5 through 8, inclusive (enclosed by 2 framing characters). If a fixed 8th bit is desired, it should be included in this figure; parity should not be included.

Question #3—EIGHTH DATA BIT? Either a 1 or 0 (enclosed by two framing characters) may be selected. A 1 will cause the 8th data bit to always be asserted: a 0 will cause the eighth data bit to not always be asserted. This question will not be asked if the number of data bits is less than eight or if the system is specified as non-ASCII.

Parameter #63—Printer Interface Control

When Comm-Stor II is powered on, all EIA Interface signals at the terminal port are initialized to their "normal" state as specified by this parameter. The operator may specify the state of five of the outgoing (Comm-Stor II asserted) control signals:

1) Clear to Send
2) Data Set Ready
3) Carrier Detect
4) Secondary Carrier Detect
5) Ring Indicator

The standard value is:

/11110/

where: 1 2 3 4 5 Signal
1 1 1 1 0 Bit Position

If the standard values must be changed, the operator should enter a "1" to assert the corresponding signal or a "0" to de-assert it. The "1's" and "0's" are entered consecutively (no blanks) from left to right in the above order. Example.

/11000/

will assert CTS, DSR, and de-assert CD, SCD and RI.

Leading zeros are assumed:

/1/ = /00001/

Parameter #64—Does Printer Provide "Data Term Ready"?

The standard response is N.

The operator should respond with Y if the signal is available on the printer and N if it is not. If the response is Y, Comm-Stor II will examine Data Terminal Ready prior to outputting files to the printer.

Some printers use Data Terminal Ready for transmission control HOLD/RESUME. When a printer's input buffer begins to overfill, the printer will drop Data Terminal Ready, causing Comm-Stor II to pause while the printer catches up. After the input buffer has emptied to a safe level, the printer raises Data Terminal Ready to signal Comm-Stor II to resume transmission.

If the printer does not provide Data Terminal Ready and this parameter has been configured YES, Comm-Stor II will never output data to the printer. Any print operation will cause the system to "hang"

Parameter #65—Does Printer Provide "Secondary Request to Send"?

The standard response is N.

Parameter #65 is similar to Parameter #64 in the way it uses the EIA Interface to control transmission. If the operator responds with Y, Comm-Stor II will stop transmission whenever Secondary Request to Send is asserted.

Note: This is opposite to Parameter #64: Data Terminal Ready is de-asserted to stop transmission.

Parameter #66—Does Printer Require "Line Feed" After "Carriage Return"?

The standard response is Y.

If the operator responds Y, the Line Feed character specified by Parameter #5 will be added by Comm-Stor II after each End of Line character is sent. Some printers are designed to perform this function automatically, in which case the operator should respond N.

2. TECHNICAL NOTE: PREVENTING LOSS OF CHARACTERS AT PRINTER

Some printers require an added length of time to process Carriage Returns and Line Feeds. The extra time required to process the Carriage Return can cause data overruns to occur at the printer.

Using Parameter #23, Comm-Stor II may be configured to insert a time delay in its transmission to the printer. In this case, the time delay should be triggered by the Carriage Return or Line Feed and the amount of time delay should be adjusted for transmission without loss of characters.

Note: If the time delay is set to a value longer than necessary, an objectionable delay will occur at the end of each line printed.

CHAPTER 7

STANDARD SYSTEM COMMANDS

CONTENTS PAGE

1. SEPARATORS AND SPECIFICATION SYMBOLS

Parameter #67—Character to Separate Command and Argument

The standard value is a [SPACE] character.

This character is used by Comm-Stor II to determine where a command ends and the argument begins. Example:

.D JONES

requests the file JONES to be displayed. The space character between the D and letter J indicates that the D is the end of the command and the J is the beginning of the argument.

Parameter #68—Character to Separate File Names

The standard value is the Slash (/).

When the operator enters a command which specifies a range of characters or names, this parameter tells Comm-Stor II that the item to the left of it is the beginning of the range; the item immediately to the right indicates the end. For example,

.S ALPHA/BETA

Comm-Stor II looks immediately to the left of the slash (/) back to the space character and determines that ALPHA is the beginning of the requested range. It then examines everything to the right of the slash until it finds another separation character (in this case a Carriage Return) and considers that to be the end of the range. In this case, all files from ALPHA through BETA will be sent.

Parameter #69—Character to Start "Enter Automatic" Incrementing Field

The standard value is (<).

To use the ENTER AUTOMATIC feature of Comm-Stor II, the operator must first load an initial value which will be used as the first file name. When

the LOAD INITIAL command is used, this character is used to specify where within the file name the incrementing portion of the name begins. Example:

.LI ABC<01>DE

In this example, Comm-Stor II takes the first character to the right of the < and interprets it as the beginning of the automatic incrementing field.

Parameter #70—Character to End "Enter Automatic" Incrementing Field

The standard value is (>).

When using a LOAD INITIAL command, this character is used to specify where the incrementing portion of the file name ends. In the above example (Parameter #69), the number 1 is interpreted as the end of the incrementing field. The total incrementing portion of the name is therefore "01" and will be incremented by 1 every time an Enter Automatic operation is used.

Parameter #71—Character to Separate File Name and Extension

The standard value is (+).

This character is used to tell Comm-Stor II where the file or range of files ends and the specified extension begins.

Example:

.S *+EXTENSION

Everything to the right of the plus (+) and to the left of the Carriage Return will be interpreted as the Extension.

Parameter #72—Character to Separate Command and Attached Instruction

The standard value is (#).

When the Attached Instruction is used, this symbol tells Comm-Stor II that everything to the left of it is the command for Comm-Stor II and everything to the right is the command that is to be sent out the modem port.

Example:

.R OUTPUT#TYPE OUTPUT

In this example, the command to receive a file called OUTPUT is interpreted as a Comm-Stor II command and the phrase TYPE OUTPUT is sent to the modem which in this case would presumably cause the remote computer to send the file OUTPUT.

Parameter #73—Directory Boundary Specification Character

The standard value is (*).

When commands involving a range of Directory entries are used, this character is used to indicate the beginning of the Directory, the end of the Directory, or perhaps the entire Directory depending on how it is placed in the command string. Three examples follow:

.DD */GEORGE
.DD GEORGE/*
.DD *

In these three examples, the * is interpreted as "from the beginning of the Directory", "to the end of the Directory" and "from the beginning of the Directory to the end", respectively.

Parameter #74—"Don't Care" Character for Extension

The standard value is (?).

When displaying or sending a range of files where the file extension has been specified, this character may be substituted for any character or characters in the extensions and will result in Comm-Stor II accepting any character in that position.

Example:

.D ALPHA/GAMMA+12??

In the above example, any file will be displayed which falls in the requested range of file names and, in addition, has an extension consisting of four characters, the first two being 12.

Parameter #75—Unused****

Parameter #76—User Response to "Sure?"

The standard response is Y.

Several Comm-Stor II commands are set up to ask if the operator is sure ("Sure?") that the specified operation is to be performed, since the operation will cause significant alteration or loss of data. The character specified by this parameter is used as an affirmative response from the operator. This response must be a single character; if any other character is entered, Comm-Stor II will interpret it as a negative response and not perform the requested operation.

Parameter #77—System "Command" Character—Terminal and Modem

The standard configuration for this character is a period (.).

This character, when entered as the very first character of a line, indicates to Comm-Stor II that a Comm-Stor II system command will follow. All system commands must begin with a period (.). Note that if this character is changed, all system commands will be changed such that the new character must be entered in the first character position of the line in order for Comm-Stor II to interpret the command correctly. The character applies to both the terminal and modem ports.

Parameter #78—System "Command" Character—Modem Only

The standard value is a comma (,).

The character is similar to Parameter #77 except that it is only interpreted as a system command if it enters the modem port. This allows a Comm-Stor II operator to issue a remote command of the form (.XY) out of the modem port into another Comm-Stor II unit. Instead of typing the standard (.) as a system command character, the comma is substituted to prevent the local Comm-Stor II from interpreting it as a local command; it is then passed out of the modem port. Any character may be chosen for this purpose providing, of course, that it is selected to be different from a normal system command character.

Parameter #79—"Select Drive 1" Character

The standard value is the numeral (1).

When added as the last character of the system command, Comm-Stor II is instructed to use Drive 1 when executing the command. It is not necessary to actually type the 1; when a command does not terminate with a 1 or 2, Comm-Stor II will assume Drive 1 is to be used.

Parameter #80—"Select Drive 2" Character

The standard value is the numeral (2).

When added as the last character of a Comm-Stor II system command, Comm-Stor II is instructed to use Drive 2 when performing the requested command.

Example:

.DS
.DS1
.DS2

The first two examples will cause the status of Drive 1 to be displayed. The third example will cause the status of Drive 2 to be displayed.

2. Comm-Stor II FUNCTIONAL COMMANDS

The remaining configurable parameters of this chapter specify which characters will be used to advise Comm-Stor II which system function the operator wishes to perform. It is assumed here that the operator is familiar with the descriptive names of each of the system commands and their use. They will therefore be listed here but not explained in detail. Consult the Reference Manual, if necessary, for clarification. The value shown in parentheses to the right of each parameter is the standard value for the parameter and may be changed by the operator in the usual manner.

Parameter #81—"BAUD MODEM" Command (BM)

Parameter #82—"BAUD PRINTER" Command (BP)

Parameter #83—"BAUD TERMINAL" Command (BT)

Parameter #84—"COPY" Command (C)

Parameter #85—"CANCEL" Command (CN)

Parameter #86—"DISPLAY" Command (D)

Parameter #87—"DISPLAY DIRECTORY" Command (DD)

Parameter #88—"DISPLAY STATUS" Command (DS)

Parameter #89—"ENTER" Command (E)

Parameter #90—"ENTER AUTOMATIC" Command (EA)

Parameter #91—"ECHO MODE" Command (EM)

Parameter #92—"ECHO EXIT" Command (EX)

Parameter #93—"INCLUDE MODE" Command (IM)

Parameter #94—"INCLUDE MODE EXIT" Command (IX)

Parameter #95—"LOAD EXTENSION" Command (LE)

Parameter #96—"LOAD INITIAL VALUE" Command (LI)

Parameter #97—"MONITOR MODE" Command (MM)

Parameter #98—"MONITOR MODE EXIT" Command (MX)

Parameter #99—"PRINT" Command (P)

Parameter #100—"PRINT DIRECTORY" Command PD)

Parameter #101—"RECEIVE" Command (R)

Parameter #102—"RECEIVE AUTOMATIC" Command (RA)
"RENAME", "RESTORE" Command (RE)

Parameter #103—"SEND" Command (S)

Parameter #104—"SEND DIRECTORY" Command (SD)

Parameter #105—"SEND STATUS" Command (SS)

Parameter #106—"SEQUENTIAL MODE" Command (SM)

Parameter #107—"ALPHA MODE" Command (AM)

Parameter #108—"STANDBY MODE" Command (SB)

Parameter #109—"WRITE-ENABLE" Command (WE)

Parameter #110—"WRITE-PROTECT" Command (WP)

CHAPTER 8

FILE EDITING PARAMETERS

CONTENTS PAGE

1. INTRODUCTION

This chapter deals with parameters associated with File Editing. As with the standard system commands, the Edit parameters are organized in two groups. The first group consists of separator characters and specification symbols, and the second group specifies the functional commands.

If this configuration is being performed for use in another Comm-Stor II unit, the operator should be sure that the information entered concerning the Edit option is representative of the actual unit to be used.

Parameter #111—Edit Option Installed?

The standard response is Y.

The operator should examine the option label on the rear panel of Comm-Stor II and respond with Y if the Edit option is installed, or N otherwise.

Parameter #112—Editor "Line Number" Separator

The standard value is the comma (,).

When using EDIT commands which specify a range of line numbers, Comm-Stor II interprets the number immediately to the left of this character as the beginning of desired range and the number immediately to the right as the end of the range.

Example:

;L5,9

In this example, Lines 5 through 9 (inclusive) will be listed at the terminal.

Parameter #113—Editor "Character String" Delimiter

The standard value is the slash (/).

When using EDIT commands which specify a character string (such as a SEARCH operation), the desired string is enclosed within two of these characters.

Example:

;S /Characters/

In this example, Comm-Stor II has been instructed to search for the character string "Characters".

Parameter #114—Edit "Command" Character

The standard value is a semicolon (;).

When this character appears as the first character on any line, Comm-Stor II assumes that the operator is attempting to enter an editing command. Note that this is ***not*** true when Comm-Stor II is actually entering a file or adding text to the scratch pad area. All editor commands, therefore, begin with this character and if it is changed, all editor commands will simultaneously be required to begin with the new character.

2. FUNCTIONAL COMMAND PARAMETERS

This group of parameters specifies what characters will be used to indicate to Comm-Stor II which of the standard Editor functions the operator wishes to be performed. It is assumed that the operator is familiar with the descriptive names of

each of the Editor commands and their use. as such and they will not be discussed in detail here but will be listed with the standard value for each parameter.

Parameter #115—"PREPARE TO EDIT" Command (ED)

Parameter #116—"SAVE FILE" Command (SV)

Parameter #117—Editor "APPEND" Command (A)

Parameter #118—Editor "DELETE" Command (D)

Parameter #119—Editor "INSERT" Command (I)

Parameter #120—Editor "LINE COUNT" Command (=)

Parameter #121—Editor "CLEAR" Command (Q)

Parameter #122—Editor "LIST" Command (L)

Parameter #123—Editor "LIST-NUMBERED" Command (N)

Parameter #124—Editor "REPLACE" Command (R)

Parameter #125—Editor "SEARCH" Command (S)

CHAPTER 9

STANDARD FORMS PARAMETERS

CONTENTS PAGE

1. INTRODUCTION

The parameters in this chapter relate to the Standard Forms option for Comm-Stor II. (The Extended Forms parameters for Comm-Stor II are described in Chapter 11.)

The operator should examine the option label on the rear panel of Comm-Stor II to determine if the Forms option is installed. It is important that the operator not indicate that the Forms option is installed when it actually is not as an attempt to use a Forms command will yield unpredictable operation of Comm-Stor II.

Parameter #126—Forms Option Installed?

The standard response is Y.

The operator should respond with a Y if the Forms option is installed and an N otherwise. If this configuration is to be used in other Comm-Stor II units, the operator should be certain that information entered concerning the Forms option is representative of the actual unit to be used.

Parameter #127—Character to Start Forms Variable Field

The standard value is ([).

This character, while primarily used with the Standard Forms option, is used in three different system operations:

1) When creating a form, the operator specifies the beginning of a variable field (to be filled in later) by typing this character. The operator then indicates each character position within the variable field by typing "dummy" characters for the duration of the field, ending with another unique character defined by Parameter #128.

2) This character is used in the User Command Table to indicate the start of a Prompt Message (page 10-3).

3) This character is again used in the User Command Table to indicate the start of a Fill-In Field (page 10-4).

Parameter #128—Characters to End Forms Variable Field

The standard value is (]).

This character, while primarily used with the Standard Forms option, again is used in three different system operations:

1) After specifying the length of a Forms variable field, the operator terminates the field by typing this character. A typical Forms variable field would be specified as follows:

   [12345]

   The resulting field would be defined as six characters long.

2) This character is used in the User Command Table to indicate the end of a Prompt Message (page 10-3).

3) This character is again used in the User Command Table to indicate the end of a Fill-In Field (page 10-4).

Parameter #129—"FORMS COMPLETE" Command

The standard value is FC.

When the operator enters this command, Comm-Stor II enters the Forms Complete Mode. (Refer to "How to Operate...Comm-Stor II.)

Parameter #130—"FORMS VARIABLE" Command

The standard value is FV.

When the operator enters this command, Comm-Stor II enters the Forms Variable Mode and remains there until a FORMS COMPLETE or FORMS EXIT command is received, or the system is restarted.

Parameter #131—"FORMS EXIT" Command

The standard value is FX.

When the operator enters this command, Comm-Stor II exits the Forms Mode and remains in this state until a FORMS COMPLETE or FORMS VARIABLE command is received.

Parameter #132—Forms Mode "String Search" Character

The standard value is [⌐Y].

The Forms option allows the operator to perform character string searches similar to those performed by the Edit option. This is accomplished by typing a [⌐Y] character in the first position of a Forms variable field followed by the desired character string and an End of Line character (consult Reference Manual for more details). This parameter specifies the character used to initiate the string search.

Parameter #133—Forms Mode "Utility" Character

The standard value is [⌐L].

In the Forms mode, the Utility character is used for two different functions:

1) FORMS CLEAR—The Utility Character [⌐L] followed by the configured End of Line character (CR) will clear current forms data and return to the top of the form at which time the operator may re-enter new data.

2) LITERAL FIELD CHARACTER—The Utility character is also used to represent the start and finish of a Forms Literal field which is to be stored with the variable data in a Forms Data file.

Example:

[⌐L|$[⌐L][45.27]

Forms Literal Field

When Comm-Stor II is not in the Forms mode and a Forms Data-File is output, the literal (in this case a $) will be transmitted just prior to the variable field (45.27) as if it has been manually entered by the operator. Refer to the Reference Manual for further explanation.

Note: This parameter should be reconfigured to a different value if the terminal being used is a teleprinter equipped with a hardware form feed capability.

Parameter #134—Forms "Line Re-Enter" Character

The standard value is [⌐Z].

The Forms option provides a means of canceling the current line and re-entering it from the beginning. This is done by the operator entering

the Line Re-Enter character anywhere within the current line. This parameter specifies the character to be used for this purpose.

Parameter #135—Forms Mode Fill-In From Drive 1

The standard value is [^O].

The Forms option provides the ability to automatically search the Directory for a specific file name and then use the contents of the file as data in a Forms variable field. Refer to Reference Manual for details. This parameter specifies what character will be used to initiate such a LOOK-UP/FILL-IN operation when the Directory search is to be performed on Drive 1.

Parameter #136—Forms Mode Fill-In From Drive 2

The standard value is [^N].

This is identical to the above parameter, but Directory search will be performed on Drive 2. Note that it is permissible to specify the same character for the Fill-In from Drive 2 commands. This will result in a Directory search being performed on Drive 1 when the command is issued.

Parameter #137—Forms "Tab" Character

The standard value is [CR].

This character is used when as much data as desired has been entered into a Forms variable field, and the operator wishes to advance through the rest of the field (without entering any characters) and begin entering characters into the next variable field. This is analogous to the Carriage Return key on a typewriter. This parameter specifies the character to be used for this purpose.

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CHAPTER 10

ANSWERBACK/USER COMMAND TABLE PARAMETERS

CONTENTS PAGE

PARAMETERS #138-#149

Parameter #138—Answerback Message

The standard response is **NONE**

Comm-Stor II has the ability to automatically transmit a configured message out the modem port whenever a particular character is received at the modem port. This is useful for automatic identification in on-line data systems. The operator may configure the Answerback Message to be any sequence of characters. When the desired sequence has been entered, enter two framing characters to indicate end of message. The framing characters will not be transmitted. When entering the Answerback Messages, the Rubout (or Delete) key may be used to erase characters; a backslash (\) character will be echoed for each character deleted. If the Answerback Message buffer overflows, Comm-Stor II will ignore characters typed and will ring the terminal bell. At this time, the operator may "rubout" some characters and/or type the framing character.

Note: The Answerback Message and the User Command Table share buffer space. As the operator lengthens the Answerback Message, the available space for the User Command Table is reduced. The total available storage space for the Answerback Message and the User Command Table equals 60 characters, or 253 characters with the Extended Command Table Option. However, the Answerback Message may not be longer than 20 characters. The two framing characters entered will occupy two of these character locations although they are not transmitted. To delete an Answerback Message, the operator should type two consecutive framing characters. This will result in a value of **NONE** when the parameter is listed.

If the Answerback/User Command buffer overflows, Comm-Stor II will reject any additional characters typed and ring the terminal bell. The operator may then type a framing character and any command partially entered will be deleted.

Parameter #139—Character to Initiate Answerback Message

The standard value is [^E].

When this character is received at the modem port, Comm-Stor II will automatically transmit the entire Answerback Message, if one has been defined. If no Answerback Message exists, Comm-Stor II will transmit nothing.

Parameter #140—User Command Table

The standard value for the User Command Table is (**NONE**). This is equivalent to an empty Command Table. It is ***extremely important*** to clear an unused Command Table since any extraneous characters may be interpreted as trigger characters and thus interfere with the normal operation of Comm-Stor II. The command table may be cleared by entering /N/. The system will indicate **NONE** the next time #140 is displayed.

The User Command Table is a list of Comm-Stor II standard system commands separated by End of Line characters and optionally preceded by identification (trigger) characters. The purpose of the User Command Table is to cause a specified series of Comm-Stor II commands to be executed as the result of inputting a single trigger character from either the terminal or the modem port. Also, if the system is configured to "Self-Start" on either Power-Up or Auto Answer (Parameter #141 and #147), Comm-Stor II will automatically execute commands stored in the User Command Table whenever it is powered on or restarted.

Within the User Command Table, each command must end with an End of Line character; if the last command does not, it will be deleted. The end of the table is indicated by the final End of Line character followed by a framing character. If two End of Line characters in a row are typed, Comm-Stor II will ring the terminal bell to indicate premature end of table. At this time, the operator should either enter a Rubout character to delete the second End of Line character or type the framing character. The Rubout (or Delete) key may be used to erase characters; a backslash (\) character is echoed for each character deleted.

There are three main considerations on the use of the User Command Table.

1) Since the User Command Table and the Answerback Message share storage space, the space available for the Answerback Message will be proportionately reduced as the User Command Table is increased in size. If the Answerback/User Command buffer overflows, Comm-Stor II will reject any additional characters typed and ring the terminal bell. The operator should then type a framing character and any command partially entered will be deleted.

2) If the unit has the Expanded User Table option installed, the combined capacity of the User Command Table and Answerback Message is 253 characters. Without this option, the total capacity is limited to 60 characters.

3) If Comm-Stor II is to be configured to "Self-Start" the first item of the User Command Table ***must*** be a valid Comm-Stor II command.

4) If the first entry in the Command Table is to be triggered by the operator entering a character from the keyboard, the "trigger" character should be the first entry in the table, followed immediately by the desired command with no spaces or characters in between. An example of a typical command table follows:

```
/[␣P].LE DATALOG[CR]
.LI<001>[CR]
.AM[CR]
.RA[CR]
.[CR]
/
```

The [␣P] at the front of the table is the trigger character that the operator must enter from the keyboard to cause the string of commands to be executed. When the [␣P] is entered, the system will execute the first command which says Load Extension with the value DATALOG. The Carriage Return indicates the end of the first command. The system will then execute the next command which says to load the Initial Value of the Automatic File name with a value of 001. The Carriage Return again signifies the end of the command.

Note: If the [␣P] had been omitted at the beginning of the table, and Parameter #141 was configured for a self-start, the system would have immediately begun to execute the commands in the table when it was powered on or restarted.

The next command in the string says to place Comm-Stor II in the Alphabetic Mode, followed by a Carriage Return. The final command says to Receive Automatic. At this point, Comm-Stor II will prepare to receive the first file under the file name "001". ***These commands were executed exactly as if an operator had entered them manually from the terminal.***

The period followed immediately by a Carriage Return at the end of the table is a special command which causes Comm-Stor II to "back up" two commands in the Command Table and execute them again. This, therefore, forms an endless loop of alternating commands of Alphabetic Mode and Receive Automatic. Comm-Stor II will therefore receive as many files from the external device as are sent to it, until the diskette is filled. This feature is particularly valuable when using Comm-Stor II as a data logging device without requiring operator control at the terminal.

In the above example, only one trigger character and a single command string is shown. The operator may specify many trigger characters, each having its own command or command string by placing the trigger character immediately before the first command and its associated command string. The trigger characters act as separators between command strings.

Example:

```
/[⌐A].DD *[CR]
[⌐B].DS[CR]
[⌐D].EX[CR]
.MX[CR]
.IX[CR]
.FX[CR]/
```

Jump Instruction

The User Command Table may also be set up to execute commands in a different order than they appear in the table. This is done by the use of a JUMP instruction. Consider the following table:

```
/[⌐A].EA[CR]
[⌐B].LE DEMO[CR]
.[⌐A] [CR]
[⌐P].LE TEST[CR]
.[⌐A] [CR]
/
```

The JUMP instruction consists of the sequence: period, control code, Return (lines 3 and 5 above). The control code is the trigger character of the command it is desired to jump to.

When the operator enters a [⌐A], an ENTER AUTOMATIC operation is performed. A [⌐B] causes a LOAD EXTENSION DEMO to be executed, and the table then jumps back to [⌐A] and executes the ENTER AUTOMATIC. The [⌐P] operates similarly except that a different extension is assigned. Any number of Jumps may be implemented but caution must be exercised when selecting trigger characters. Only characters which are not used for any other purpose may be selected. Escape sequences may also be used as triggers; however, they may not be used to initiate jumps inside the command table. The user should enter the configured Escape character (Parameter #14) followed by any ASCII character.

User Command Table Prompt

Prompting messages may be stored in command strings in the User Command Table. The prompting message is entered into the User Command Table in the following format:

```
.[XPROMPTING MESSAGE] [CR]
```

[CR] = Carriage Return is keyed in at the terminal.

Brackets ([], Parameters #127, 128) define the start and finish of the Prompting Message. X = Port through which message will be output. Type a T for terminal, M for modem, P for printer. If none of the three ports are specified, the prompting message will automatically default to the terminal port.

If the operator wishes to put a Carriage Return in the Prompting Message, a "[" character (Parameter #127) is inserted. This character represents the Carriage Return within the message. A final [CR] is entered as usual to complete the command.

Example:

```
/ [XPROMPTING MESSAGE[] [CR]
/
```

User Command Table Fill-In Feature

The User Command Table will accept commands where the argument portion of the actual command is variable.

When a fill-in command is taking place in the User Command Table, Comm-Stor II will accept the argument of that command from either the terminal or modem port. Only one fill-in field is allowed per command string:

.ZZ_[X][CR] or
.ZZ_*/[X][CR] or
.ZZ_ABLE+[X][CR]

Where: ZZ = actual command: [] = define the variable portion of the command ([] character, Parameters #127, 128); X = Input port through which Comm-Stor II accepts the argument or completion of a Command: T for terminal, M for modem.

Examples:

/[A].D_[T][CR]
[B].LI_<001[M]>9CR]

The Fill-In Command feature is commonly used in combination with a Prompting Message.

Example:

/[_A].[TTYPE FILE NAME][CR]
.D_[T][CR]
/

In this example, whenever [_A] is entered from the terminal or modem, the Prompting Message "TYPE FILE NAME" appears on the terminal. The next command, .D_ puts Comm-Stor II, III into the display mode; it will then wait for the argument of the command to be entered through the terminal.

The actual command, .D_ will not appear on the terminal. After the argument and a Carriage Return have been entered, Comm-Stor II, III will display a file with the name entered after the Prompting Message.

Edit Function

After the operator enters the Configure command (.C140), the User Command Table edit function is available for configuring the User Command Table. Instead of retyping the entire table every time a change is made, it is possible to edit portions of the table. The general format of the edit command line is two framing characters, the search string, a framing character, the replacement string, and a final framing character:

//Search string/Replacement string/

After the third framing character, the Configurator attempts to locate the search string, beginning at the start of the User Command Table. If an identical search string is located, it is deleted; if the string cannot be found, a "?" is printed on the terminal. If three framing characters in a row are entered, thus specifying a null search string, the replacement string will be inserted at the start of the User Command Table. Otherwise, the replacement string will be inserted into the table in place of the search string. If a null replacement string is specified, the search string is deleted and nothing is inserted. If a mistake is made entering a character, the Rubout (or Delete) key may be used to delete the previous character in the string. Control returns to the "." prompt when the edit is completed.

The search string and replacement string have maximum lengths of 127 characters each. In their use, however, they do not need to be the same length.

Parameter #141—Self-Start On Power-Up or Restart?

The standard response is N.

This parameter allows the User Command Table to be automatically triggered when Comm-Stor II is powered up instead of manually triggered by an operator entering a specific trigger character. This provides a means of having Comm-Stor II "self-start" when powered up without the necessity of receiving its initial commands from an operator or a remote device. This is particularly useful when Comm-Stor II is used as a data-logging device with a laboratory instrument, for example, which cannot issue the required Comm-Stor II commands. The system is made self-starting by placing the first desired command at the beginning of the Command Table instead of a trigger character. This command will now have no defined trigger character but will automatically execute when Comm-Stor II is powered up. All other operations of the User Command Table remain the same as in the previous example. If Comm-Stor II is configured to "self-start", and it is powered-up without a disk inserted in the drive, the unit will wait until a disk is loaded (into Drive 1 if it is a dual unit).

Note: A Command Table can either self-start or start on a trigger character, but not both. If "self-start" is selected and a trigger character is placed at the beginning of the Command Table, an error message (#11) will be displayed at power-up time.

Parameter #142—Send Answerback Message After Initial Connection?

The standard response is N.

With a YES response, Comm-Stor II will automatically transmit the Answerback Message (see Parameter #138) shortly after connection is made with the modem under unattended operation. Comm-Stor II will also transmit the Answerback Message upon receipt of the character specified in Parameter #139.

Parameter #143—Inhibit Auto Line Feed to Modem Port?

The standard response is N.

This parameter specifies whether or not a Line Feed character (Parameter #5) will be added after transmission of the End of Line character to the modem port when in Echo Mode.

When the Echo Mode is used with two Comm-Stor IIs which are communicating with each other via modems, the Line Feed character is usually added after each End of Line character (N response). When a Half Duplex modem is used for transmission to a computer, this Line Feed character may be inhibited by a Y response.

Parameter #144—Terminal/Modem Buffer Sizes

The standard response is (00).

This parameter only applies to Comm-Stor II units with the 4K, 8K or 12K Expanded RAM option. All Comm-Stor II units without the additional RAM must be configured to the value (00) or unpredictable operation will result.

In Comm-Stor II units with at least 4K Expanded RAM memory, the user may allocate a portion or all of 4K RAM for input BUFFERING. Buffering allows temporary storage of data and commands. Specifically, this parameter allows the operator to specify the amount of memory that will be allocated for terminal port and modem port buffering.

The first character position of the value represents the amount of memory that will be allocated for terminal buffering; the second character represents the amount of memory that will be allocated for modem port buffering. The numbers entered for the terminal and modem values must be "1", "2", "3", or "4". This represents 1K, 2K, 3K, or 4K of buffer memory, more accurately as shown below:

1K = 1024 CHARACTER BUFFER
2K = 2048 CHARACTER BUFFER
3K = 3072 CHARACTER BUFFER
4K = 4096 CHARACTER BUFFER

Since the total amount of memory that can be used for buffering is the high 4K of RAM, the sum of the modem and terminal values should be less than or equal to 4. If the combined value is greater than 4, a "?" response will follow, indicating a Syntax Error.

Detailed information on setting up the buffering feature is provided in Appendix H—"TERMINAL/MODEM BUFFERING". General information on using the 4K Expanded RAM Option is provided in Appendix G—"4K EXPANDED RAM MEMORY ALLOCATION".

Parameter #145—Lower DSR During Standby?

The standard response is N.

If the operator responds with Y, Comm-Stor II will automatically lower Data Set Ready at the terminal and printer ports whenever the unit is put in the Stand-by Mode (.SB).

This feature is used primarily to cause devices connected to these ports to enter a standby mode whenever Comm-Stor II is in standby (i.e., the printer motor will run only when Comm-Stor II has answered an incoming call in remote dial-up applications).

Parameter #146—Use EIA Lines to Close Files

The standard response is N.

If the operator responds with Y, Comm-Stor II will automatically close an Enter or Receive operation upon losing one of the following EIA control lines:

1) If Comm-Stor II is in the Receive Mode and configured to recognize Data Set Ready at the modem port (Parameter #60—YES), the file will auto-close upon losing Data Terminal Ready.

2) If Comm-Stor II is in the Enter Mode and configured to recognize Data Terminal Ready (Parameter #40—YES), the file will auto-close upon losing Data Terminal Ready.

Note: This method of closing files cannot be implemented if input buffering is used at the approximate port.

Parameter #147—Self-Start on Auto-Answer?

The standard response is N.

If this parameter is configured YES, whenever Comm-Stor II performs an Auto-Answer operation, the User Command Table will be automatically executed in a manner similar to the Self-Start or Restart operation (see Parameter #141 for detailed process). An Auto-Answer operation is performed as follows:

1.) for Half Duplex:

after detecting RING followed by DSR, if DSR is being used (see Parameter #60).

2.) for Full Duplex:

after detecting RING followed by CD.

If an Answerback message is configured, it will be transmitted before executing the User Command Table. Also, unlike the Self-Start on Power-Up process, the unit will *not* wait for Drive 1 Ready before executing the User Command Table.

Parameter #148—Inhibit Monitor Mode on Send?

The standard response is N.

A Y response instructs Comm-Stor II to disable the Monitor mode during SEND operations. However, Monitor mode *will re- main enabled* during RECEIVE operations (assuming the Monitor mode has been selected). This is applicable in situations where it is necessary to monitor data received and not data sent (e.g., when using a modem or remote device that echoes data as it is sent).

Parameter #149—Raise RTS After Receiving EOT?

The standard response is N.

A Y response will cause Comm-Stor II to handle the RTS line to the modem port as follows:

1.) *Initital connect*—To allow either the terminal or remote site to initiate communications, RTS will remain low until either:

(a) the operator enters conversation data at the terminal, or
(b) the remote site sends a message followed by the configured EOT character (see Parameter #11).

2.) *During communications (DSR asserted)*—RTS will be continually asserted except:

(a) after sending the configured "Turn Around" character when performing conversation operations.
(b) after Send operations.
(c) after sending an Attached Message using a Receive (.R) command.

In cases (a) and (b), RTS will be reasserted when the configured EOT character is received. In case (c) it will be reasserted after the data (terminated by an ETX character) has been received.

CHAPTER 11

EXTENDED FORMS PARAMETERS

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Parameter #184—"Decimal Point" Character

Parameter #185—"Plus Sign" Character

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Parameter #187—"Field Mismatch Error" Character

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Parameter #189—"Empty Field" Fill Character

Parameter #190—Output Fixed Length Fields?

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Parameter #192—"Mid-Line" Delimiter

Parameter #193—"End of Line" Delimiter

Parameter #194—"Substitution Table" Minor Delimiter

Parameter #195—"Substitution Table and Allowable Entry Table" Major Delimiters

Parameter #196—"End-of-Page" Indication Option

Parameter #197—"Variable Field Indicator" Characters #1 and #2

Parameter #198—Inhibit Output of Skipped Pages?

PARAMETERS #150-#198

Parameter #150 "FORMS COMPLETE" Command

The standard value is FC.

As in Parameter #129, when the operator enters this command, Comm-Stor II enters the Forms Complete mode.

Note: The configuration for Parameter #150 and Parameter #129 will be identical.

Parameter #151 "FORMS VARIABLE" Command

The standard value is FV.

As in Parameter #130, this command places Comm-Stor II in the Forms Variable mode.

Note: The configuration for Parameter #151 and Parameter #130 will be identical.

Parameter #152 "FORMS EXIT" Command

The standard value is FX.

As in Parameter #131, this command will cause Comm-Stor II to exit the Forms mode (either FC or FV) and remain in this state until another Forms Complete or Forms Variable command is received.

Note: The configuration for Parameter #152 and Parameter #131 will be identical.

Parameter #153—Auto Load Feature Enabled?

The standard response is N.

This parameter enables or disables the Auto Load feature. Data files created while Comm-Stor II is in the Auto Load mode will be recorded on diskette along with the name of their associated form. This enables Comm-Stor II to ***automatically load and use that form*** whenever the data file is output with the .FC or .FX command.

CAUTION: DATA FILES CREATED WHEN THE AUTO LOAD FEATURE IS ENABLED CONTAIN ADDITIONAL CONTROL CHARACTERS THAT ARE GENERATED BY Comm-Stor II. THESE FILES SHOULD BE OUTPUT *ONLY* WHEN Comm-Stor II IS IN THE AUTO LOAD MODE IN ORDER THAT THESE CONTROL CHARACTERS ARE PROPERLY HANDLED. CONSEQUENTLY, IT IS RECOMMENDED THAT THE USER DECIDE ON WHETHER OR NOT THE AUTO LOAD FEATURE SHALL BE USED, AND IF SO, TO USE IT *ALL THE TIME* RATHER THAN RECONFIGURE THIS PARAMETER, EVEN ON A LOW FREQUENCY BASIS.

Parameter #154—Does Terminal Have Cursor Controls?

The response is N.

If an operator has a CRT terminal with all of the following cursor movements, the response should be Y:

Cursor Left
Cursor Right
Cursor Up
Cursor Down
Cursor Home
Clear Screen

Hardcopy terminals or CRT terminals without all of the above controls must configure this parameter with an N response.

Parameter #155—Preprint Page?

The standard response is N.

A response of Y is permitted for only those terminals having complete cursor control (as described in Parameter #154) such as the Dataspeed 40/2 Terminal. Each page of a form would then be PRE-PRINTED before the operator begins entering data into that page.

If this parameter is configured with a Y response, then Parameters #156 "Preprint Line?", #157 "Skip Intermediate Line?", and #158 "Skip Line" Character do not apply.

Parameter #156—Preprint Line?

The standard response is N.

A Y response is permitted for any terminal device. This would cause Comm-Stor II to PRE-PRINT each successive line of a form, one line at a time, prior to data entry after completion of the previous line.

If this parameter is configured with a Y response, then Parameter #155 "Preprint Page?" should be configured with an N response.

Parameter #157—Skip Intermediate Line?

The standard response is N.

A Y response is permitted for any terminal device. During forms data entry this would cause those lines of a form which were branched around or tabbed over not to be displayed.

If this parameter is configured with a Y response, refer to Parameter #158 "Skipped Line" character. Further, Parameter #155 "Preprint Page" should be configured with an N response.

Parameter #158—"Skipped Line" Character

The standard value is a dash (—).

When Parameter #157 "Skip Intermediate Line" is configured with a Y, the "Skipped Line" Character will be displayed in place of each line skipped over. Configuring this parameter to a space character would cause the display to maintain line displacement using blank lines.

This parameter may be configured with a value of (**none**) by entering two successive framing characters. Comm-Stor II will leave no indication any lines have been skipped, and the next line to be executed will be displayed immediately after the previously completed line.

Parameter #159—Enable Redisplay?

The standard response is N.

When configured with an N response, Comm-Stor II will not redisplay variable field data that has been modified (for example, substitution).

A response of Y will allow modified variable data to be redisplayed under the following conditions:

1.) For terminals with cursor control, each field will be redisplayed when the field is closed using a CLOSE FIELD or TAB character.

2.) For hardcopy terminals or softcopy terminals without cursor control, any line containing a field operated on by substitution will be redisplayed. Further, if the operator deletes characters beyond the first character of a variable field, the entire line containing that previously executed field will be redisplayed.

Parameter #160—"Go to Top of Page" Characters #1 and #2

The standard values are [~A] and [~A].

Either of these characters (or escape character sequence, see below) returns the cursor/printhead to the top of the current page, thus restarting that page, but without erasing any of the previously entered data.

The user is permitted to configure two parameters for this function. This option provides an additional convenience for the operator during keyboard operations. As illustrated by the standard values, both characters may be configured to the same value. If you do not desire to configure the second character, type a Return in response to the prompt for the second character.

As an additional feature, either (or both) of these characters may be configured to be an escape character sequence (an escape character followed by any other character). This is done by entering an escape character and any other character between the framing characters.

In summary, some of the possible combinations are:

Character #1	Character #2
~A	~A
~A	M
~D	**none**
EscA	**none**
N	EscA
EscP	EscZ

Parameter #161—"Clear and Restart Page" Character

The standard value is [~L].

Entering this character causes all variable data to be erased requiring a total re-execution of the page. The cursor or printhead will be repositioned at the start of the first variable field.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #162—"Backfield" Characters #1 and #2

The standard values are [~B] and [~B].

Either of these characters (or escape character sequences, see below) allows the operator to correct errors by repositioning the cursor or printhead as follows:

1.) For terminals with cursor control, entering either of the BACKFIELD characters will reposition the cursor either to the first character of the current variable field or to the first character of the previous variable field, should the cursor be already located at the first position of the current variable field.

    Note that, as the cursor is BACKFIELDed and leaves a variable field, the data in that field is erased.

2.) For hardcopy terminals or softcopy terminals without cursor control, entering either of the configured BACKFIELD characters will cause Comm-Stor II to send a cursor left output character, followed by a space and another cursor left output character to the terminal, thus indicating that a data field has been erased.

The user is permitted to configure two parameters for this function. This option provides an additional convenience for the operator during keyboard operations. As illustrated by the standard values, both characters may be configured to the same value. If you do not desire to configure the second character, type a Return in response to the prompt for the second character.

As an additional feature, either (or both) of these characters may be configured to be an escape character sequence (an escape character followed by any other character). This is done by entering an escape character and any other character between the framing characters.

Parameter #163—"Closefield" Characters #1 and #2

The standard values are [CR] and [CR].

This parameter signifies the end of data entry for the current variable field. If either of the configured characters are entered in the middle of a variable field, all data to the right of the current cursor/printhead position will be deleted.

Additionally, after entering the CLOSEFIELD character, all closefield operations including testing

for minimum or exact lengths, range, allowable entry, substitution, look up and fill in, justification and branching will be performed. The cursor or printhead will advance to the next variable field provided there is no branching operation.

The user is permitted to configure two parameters for this function. This option provides an additional convenience for the operator during keyboard operations. As illustrated by the standard values, both characters may be configured to the same value. If you do not desire to configure the second character, type a Return in response to the prompt for the second character.

As an additional feature, either (or both) of these characters may be configured to be an escape character sequence (an escape character followed by any other character). This is done by entering an escape character and any other character between the framing characters.

Parameter #164—"Tab" Characters #1 and #2

The standard values are [TAB] and [TAB].

This parameter functions similarly to the CLOSEFIELD character (Parameter #163) in that it:

1.) closes the field and performs all operations described in Paramater #163

2.) advances the cursor/printhead to the next variable field if no branching operation is to be performed. The cursor/printhead will stop when Comm-Stor II encounters a non-keyboard entry or a variable field designated as a TAB stop.

The TAB character ***differs*** from the CLOSEFIELD character in that there will be no loss of data if the TAB character is entered in the middle of a variable field.

The user is permitted to configure two parameters for this function. This option provides an additional convenience for the operator during keyboard operations. As illustrated by the standard values, both characters may be configured to the same value. If you do not desire to configure the second character, type a Return in response to the prompt for the second character.

As an additional feature, either (or both) of these characters may be configured to be an escape character sequence (an escape character followed by any other character). This is done by entering an escape character and any other character between the framing characters.

Parameter #165—"Auto Tab" Character

The standard value is [␣Z].

Entering the Auto Tab character causes Comm-Stor II to repeatedly perform the Tab function until the cursor or printhead reaches either a field that has never been executed or one that fails to meet the attribute criteria assigned to that field, or until it reaches the end of the page.

After editing or correcting a particular field, the AUTO TAB character provides an efficient means for the operator to return to the current field of data entry.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #166—"Error Override" Character

The standard value is [␣K].

For a field that has been designated as an "Override" field, entering this character advises Comm-Stor II to ignore the results of any of the following attribute tests, character type, minimum length, exact length, range, and allowable entry.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #167—"Close Page" Character

The standard value is [␣P].

The "Close Page" character advises Comm-Stor II that the operator has completed data entry into that page. ***This character must be entered only when the cursor or printhead is positioned at the end of the current page or at the start of a variable field.*** Comm-Stor II will then fill all

unexecuted variable fields (those tabbed over, branched around or not executed) with "Empty Field" Fill characters (Parameter #189), then close the page by writing the data to disk.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #168—"Verify Page" Character

The standard value is [^V].

The "Verify Page" character must ***only*** be entered either at the beginning of a variable field or at the end of a page. In either case, Comm-Stor II will enter the Verify mode and the cursor or print-head will return (come to rest) at the start of the first variable field of the current page. The operator may then begin verification by re-entering data into the form.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #169—"Verify Bypass" Character

The standard value is [^Y].

If a particular field fails the verification test (i.e. the initial and verification entries do not coincide) and the operator wishes to accept the verification entry, the "Verify Bypass" character must be entered. The verification entry will now be stored in place of the previous data.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #170—"Close Form" Character

The standard value is [ETX].

Entering this character at the beginning of a variable field or at the end of a page will close the current page, fill all variable fields on any successive pages with "Empty Field" Fill characters (Parameter #189), and enter all successive pages onto disk.

Note: The configuration for Parameter #170 will cause Parameter #8 "End of Text" Character to be configured identically.

Parameter #171—"Fill in from Drive 1" Character

The standard value is [^O].

Refer to Parameter #135 for an explanation.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #172—"Fill in From Drive 2" Character.

The standard value is [^N].

Refer to Parameter #136 for an explanation.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #173—"Cursor Right" Characters #1 and #2

The standard values are [^R] and [^R].

The cursor right parameter allows the operator to move the cursor one position to the right without affecting any character that may currently be in that position.

The user is permitted to configure two parameters for this function. This option provides an additional convenience for the operator during keyboard operations. As illustrated by the standard values, both characters may be configured to the same value. If you do not desire to configure the second character, type a Return in response to the prompt for the second character.

As an additional feature, either (or both) of these characters may be configured to be an escape character sequence (an escape character followed by any other character). This is done by entering an escape character and any other character between the framing characters.

Parameter #174—"Cursor Left" Character Entered?

The standard value is [RUB].

This parameter defines the character which will be used to delete incorrectly entered data. Refer to Parameter #27 for a complete explanation.

Parameter #175—"Cursor Left" Output Character

The standard value is (\).

This parameter defines the character which Comm-Stor II outputs to the terminal whenever the operator enters the cursor left character.

For terminals with cursor control, this character should be the cursor left character or the backspace. For terminals without cursor control, this character should be either the backslash (\) or the backspace character.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #176—"Cursor Right" Output Character

The standard value is (ϕ). (space)

This parameter defines the character Comm-Stor II outputs to the terminal to move the cursor or printhead one position to the right.

For terminals with cursor control, this parameter should be configured to the nondestructive cursor right character specified for the particular terminal in use rather than a space character.

For terminals without cursor control, this character should be configured as a space.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #177—"Cursor Up" Output Character

The standard value is [^K].

This parameter defines the control code or escape sequence Comm-Stor II outputs to the terminal to move the cursor up the screen one line at a time. This parameter is *not* applicable for hardcopy terminals or softcopy terminals without cursor control.

Refer to Appendix J in this manual or to the respective terminal's Reference Manual for the proper sequence or control code.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #178—"Cursor Down" Output Character

The standard value is [LF].

The parameter defines the control code or escape sequence which Comm-Stor II outputs to the terminal to move the cursor one line down on a ***softcopy*** terminal or advance the platen one line on a ***hardcopy*** terminal.

For softcopy terminals, refer to Appendix J in this manual or the respective terminal's Reference Manual for the proper sequence or control code.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #179—"Carriage Return" Output Character

The standard value is [CR].

This is the control code or escape sequence which Comm-Stor II outputs to the terminal to move the cursor or printhead to the first character position of the current line.

Refer to the terminal's Reference Manual for the proper sequence or control code.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #180—"Cursor Home" Output Character

The standard value is [^^]. (Control and Up-Arrow).

This parameter only applies to those terminals with cursor control. It defines that control code or escape sequence which Comm-Stor II outputs to the terminal to move the cursor to the upper left corner of the screen.

Refer to Appendix J in this manual or to the respective terminal's Reference Manual for the proper sequence or control code.

This parameter may be configured as a single character or a two character escape sequence (by entering the configured escape character and any other character).

Parameter #181—"Clear Screen" Output Character

The standard value is [^Z].

This parameter only applies to those terminals with cursor control. It defines that control code or escape sequence that Comm-Stor II outputs to the terminal to erase the screen.

Refer to Appendix J or to the respective terminal's Reference Manual for the proper sequence or control code.

This parameter may be configured as a single character or two character escape sequence (by entering the configured escape character and any other character).

Parameter #182—"Literal Field" Framing Character

The standard value is [^W].

This parameter defines the framing character which will be used to indicate the start and end of a literal field when generating the form structure (See Comm-Stor III Reference Manual).

Parameter #183—"Security Field" Fill Character

The standard value is an asterisk (*).

This parameter defines the character that will be used to display any variable field designated as a "security" field. The actual variable data will remain in memory. (Refer to the Comm-Stor III Reference Manual.)

Parameter #184—"Decimal Point" Character

The standard value is (.).

This parameter defines the character which will be used when entering numeric data. It indicates the end of the units place and the start of decimal places.

Parameter #185—"Plus Sign" Character

The standard value is (**none**).

This parameter defines the character which is assigned to all numbers greater than or equal to zero.

Parameter #186—"Minus Sign" Character

The standard value is (-).

This parameter defines the character which is assigned to all numbers less than zero.

Parameter #187—"Field Mismatch Error" Character

The standard value is ?

This parameter defines the character used to fill a variable field when data which fails any of the following entry tests is moved into that field from another field or from storage: minimum length, exact length, maximum size, character type, range or allowable entry.

Parameter #188—"Numeric Error" Character

The standard value is (#).

This parameter defines that character used to fill variable data fields in which a numeric error occurs.

Parameter #189—"Empty Field" Fill Character

The standard value is (␣) (space).

This parameter defines that character which will be used to fill those variable fields not completed by data entry. Such incomplete fields include those that were tabbed over, branched around, or skipped by entering CLOSEPAGE or CLOSEFORM characters prior to their execution.

When one or more pages are skipped or a Form is closed (see Parameter #170, "Close Form" character) prior to completing the last field of the Form, the skipped or incompleted fields are output to the data file as follows:

1.) If Comm-Stor II is configured for Fixed Length Fields with delimiters, an Empty Field Fill character is output for each unfilled position of the field. These are then followed by the appropriate Mid-Line or End-of-Line delimiter.

2.) If Comm-Stor II is configured for Fixed Length Fields without delimiters, Empty Field Fill characters are output as above, but without delimiters.

3.) If Comm-Stor II is configured for Variable Length Fields (delimiters ***must*** be used), only the appropriate delimiter character is output.

Parameter #190—Output Fixed Length Fields?

The standard value is N.

If a variable field is not completely filled out with entry characters, a Y response here will cause Comm-Stor II to fill such a field with its respective fill characters.

An N response will cause Comm-Stor II to store only that data which was entered or substituted into the field.

Parameter #191—Output with Delimiters?

The standard response is Y.

A Y response will cause Comm-Stor II to place the configured one or two character sequence between each variable field on the same line of a form as the fields are stored. This character or sequence is called the MIDLINE DELIMITER (Parameter #192). Another character or sequence called the END-OF-LINE DELIMITER (Parameter #193) will be placed between the variable fields on different lines of the same form as they are stored.

This parameter must be configured YES if the user is not storing fixed length fields (see Parameter #189). Configuring this parameter NO will result in the data being recorded as one continuous stream with no field separators.

Parameter #192—"Mid-Line" Delimiter

The standard value is [CR].

This parameter defines the single or two character sequence which will separate those stored variable fields that are on the same line of a form when the raw data is displayed. If Parameter #190 has been configured NO, this parameter will not be applicable.

When configuring this parameter, the operator may enter either a single character or a two character sequence between the framing characters.

Parameter #193—"End-of-Line" Delimiter

The standard value is [CR].

This parameter defines the single or two character sequence which will separate those variable fields on one line of the form from those on another line when the raw data is displayed. If Parameter #190 has been configured NO, this parameter will not be applicable.

When configuring this parameter, the operator may enter either a single character or a two character sequence between the framing characters.

Parameter #194—"Substitution Table" Minor Delimiter

The standard value is (,).

This parameter is used in the Substitution Table and defines the character that will separate the "key" field from the associated replacement field. It is also used to separate the replacement fields from one another when multiple replacement fields are used.

To perform a substitution, the operator enters the "key" phrase. Comm-Stor II then locates this phrase in the Substitution Table. The associated replacement fields are automatically merged into the form in sequential order.

Parameter #195—"Substitution Table and Allowable entry Table" Major Delimiters

The standard value is (;).

This parameter is used in the Substitution Table and Allowable Entry Table. In the Substitution Table it designates the end of a replacement field or series of replacement fields. In the Allowable Entry table, it acts as the delimiter for each entry.

Parameter #196—"End-of-Page" Indication Option

The standard value is 2.

This parameter specifies the display option which will indicate the completion of a page of a from. These options are described below:

0: DANCE: For softcopy terminals the cursor will "circle" the current position. On hardcopy terminals, the printhead will be positioned at the start of the next line, then shuttle back and forth between the first and second character positions.

1: SONG AND DANCE: The cursor or printhead will be positioned and move as described above, ***and*** the terminal bell will ring.

2: SPEAK: The terminal will display the message "End of Page."

3: SPEAK AND SING: The message in Option 2 will be displayed ***and*** the terminal bell will sound.

Note: If Comm-Stor II is configured to Preprint Page (Parameter #155), it is recommended that this parameter be configured to 0 or 1. If 2 or 3 is specified, the "END OF PAGE" message, displayed at the bottom of a page, will displace the forms page up one line. As a result, any CLEAR AND RESTART PAGE, GO TO TOP OF PAGE, or BACKFIELD operation will be displayed by one line within the form.

Parameter #197—"Variable Field Indicator" Characters #1 and #2

The standard values are:

Character #1 (<)
Character #2 (>)

The variable field indicator characters are used to indicate the location and size of the variable fields within a form. They are not used as framing characters. Rather, each occurrence represents one position of a variable field. A typical example of a form containing three variable fields, would appear as follows:

Name>>>>>>>>>>>>>>>> Age>>
Occupation>>>>>>>>>>>>>>>>

The length of a variable field must range from 1 to no more than 127 positions and be entirely contained on one line.

Two characters are provided to handle the situation where two variable fields are positioned ***next to each other***. For example, a six position variable field that is directly followed by a two position variable field would be represented as <<<<<<>>.

Parameter #198—Inhibit Output of Skipped Pages?

The standard response is N.

If the user responds Y, no data, fill characters, or delimiters will be output for the skipped pages. A Y response to this parameter may cause the pages of a data file to be stored on diskette in NON-SEQUENTIAL order. Therefore, during DISPLAY, PRINT, or SEND operations data may be incorrectly merged with the form.

CHAPTER 12

REFRESH DISKETTES

CONTENTS PAGE

1. EQUIPMENT SET UP

Since a Refresh diskette is created using the Configurator, the equipment must be set up in accordance with the procedure in Chapter 2 in this manual.

2. CREATING REFRESH DISKETTES

To create a Refresh diskette, the operator enters the following command:

.W

The Configurator will respond with the message: LOAD SCRATCH DISK (empty or blank diskette). Remove the Configuration diskette from Comm-Stor II and place a blank diskette into Drive 1 (upper drive on a Model 8220A). Note that any information previously stored on a nonblank diskette will be destroyed during this process.

When the disk drive door is opened to remove the Configuration diskette, Comm-Stor II will type a message "TYPE G". Comm-Stor II will return the terminal cursor or printhead to the beginning of the next line after the blank disk is inserted and the door is closed. Now, type the letter G. The disk drive BUSY light in the front panel should flash for approximately one second. This indicates that the system parameters have been preserved on the diskette.

CAUTION: IF THE CONFIGURATOR IS LEFT IN THE DRIVE AND THE OPERATOR INSERTS A BLANK DISKETTE INTO THE DRIVE AND TYPES "G", THE CONFIGURATOR WILL BE DESTROYED.

Comm-Stor II will then type the message "AGAIN?", and will ask if another Refresh diskette is to be created. The operator should type either N or Y. If the operator types Y, the Configurator will ask the operator to again remove the diskette currently in the drive and replace it with a scratch diskette. This process of creating system Refresh diskettes may be repeated as many times as desired.

Any letter other than Y or N will be ignored. If the letter N is entered, Comm-Stor II will prompt the operator to place any diskette in the disk drive and press a key on the keyboard. When the operator presses the key, Comm-Stor II will stimulate the effect of pressing the RESTART button. Thus, if the operator has placed the Configuration diskette in the disk drive before pressing the key, the configuration process will be restarted from the beginning. If a User diskette is placed in Drive 1 before typing a character, Comm-Stor II will be initialized for normal operations, and the normal asterisk (*) will be typed indicating that the operator may proceed with the next command.

This completes the creation of Refresh diskettes.

3. USING REFRESH DISKETTES

Comm-Stor II has a self-checking feature to make sure that the parameters stored in the Configuration Memory are meaningful. If for any reason (such as storing Comm-Stor II for longer than one year in a power-down condition) the contents of Configuration Memory are altered or destroyed, the STATUS indicator on the front panel will illuminate when the system is initially powered up. It will remain on until the Configuration memory has been refreshed.

If this should occur, the operator has two alternatives: either go through a complete configuration process, setting each parameter to the desired value, or to use a Refresh diskette created at an earlier time to restore the parameters to their normal state. To do the latter, the operator should place a Refresh diskette in Comm-Stor II (Drive 1 on a Model 8220A) and depress the RESTART switch. All front panel indicators of Comm-Stor II should illuminate for approximately 1.5 seconds indicating that the system is undergoing a Refresh operation. Once the Refresh is complete, all indicators (on a dual drive system) except for Drive 1 READY and Drive 1 BUSY should go out. The

READY and BUSY lights for Drive 1 should remain on for approximately one-half second longer, and they, too, should go out, indicating that Comm-Stor II configuration parameters have been successfully loaded from the diskette. The operator may now initialize the system for normal operation by replacing the Refresh diskette with a User diskette and depressing any key on the keyboard or by depressing the RESTART switch. When this occurs, the front panel indicators should illuminate normally to indicate normal system operation.

Many operators may have a library of Refresh diskettes for the purpose of rapidly reconfiguring Comm-Stor II to communicate with different devices. The operator may refresh with Comm-Stor II according to the above described procedure at any time.

CHAPTER 13

CREATING USER DISKETTES

CONTENTS

1. HARDWARE SET UP PROCEDURE

If the operator has just completed any operation utilizing the Configuration diskette, then the hardware is now correctly configured to build the User diskettes. If this is not the case, refer to Chapter 2 for detailed instructions on hardware set-up.

All diskettes used with Comm-Stor II for data storage must be initialized, or "BUILT" by use of the Configuration diskette. The command which causes the Configurator to Build User diskettes is the following:

.B

When the operator enters this command, Comm-Stor II responds by typing DUP OLD DISK? If the operator wishes to duplicate the file structure of an existing User diskette, the response should be Y. The operator will then be asked to remove the Configuration diskette from the disk drive and temporarily replace it with the User diskette to be duplicated. Immediately after the old disk is inserted, Comm-Stor II will read the file structure information and respond with "RELOAD CONFIGURATOR".

Once the Configurator has been reloaded, Comm-Stor II will ask the question "USE IBM SPARE TRACKS?". If the diskette isn't going to be used on IBM equipment, the operator may respond with a Y. This means Tracks 74, 75, 76 will be used for data storage as opposed to being reserved as IBM spares.

Note that files and Directory information contained on this diskette will not be transferred to the new diskette since the sole purpose of this operation is to initialize a blank diskette. The resulting diskette will have no file names entered in the Directory.

If the operator answers the original question with the letter N (for NO), a series of questions will be asked. Whenever a response to a question is an unacceptable value, the question will be repeated and the operator has the opportunity to re-enter a correct response.

The next question that will be asked is "FIXED LENGTH FILE?". The operator can respond with a Y or an N. Variable Length File User Diskettes allow the operator to enter large and small files on the same diskette in a very efficient back-to-back format. With Fixed Length User Diskettes, the operator specifies the size of all file slots. If the entered file does not fill in the entire slot, the remaining area on the diskette assigned for that particular file slot is left unused.

Refer to section 2, below, for the operator specified file parameters used when building Fixed File Length Diskettes. Users wishing to build Variable File Length diskettes should skip to section 3 on page 13-3.

2. FIXED FILE LENGTH USER DISKETTES

The following variables will be defined when building Fixed File Length User Diskettes:

1) Number of sectors (1 sector equals 128 characters) reserved for each file.

2) Number of lines of scratch pad.

3) Maximum number of characters per line.

4) Maximum number of characters per file name.

5) Maximum number of characters per extension.

A Comm-Stor II diskette can store approximately 256.000 characters of information. After sharing this space among file names, file name extensions, and the area set aside for the scratch pad, about 240.000 characters remain for operator information. Obviously, if any of these items increase in size, the space available for the others is reduced. A definite tradeoff therefore exists in the selection of these file parameters. When the operator has specified all the parameters listed in the above table, the Configurator calculates the maximum number of files which may be stored on the diskette.

The operator may either build diskettes as specified or change the file parameters and reexamine the results. The initial creation of User diskettes may involve some juggling of parameters to achieve an optimum result. A table is presented in Appendix B of this manual to assist the operator in selecting these parameters. This table is intended as an initial guideline to provide the operator with a reasonable starting point. The diskette parameters may then be "trimmed" to obtain an acceptable result.

Each of the questions asked during the Build process will be individually discussed.

A. Number of Sectors Per File?

A sector is a block of 128 characters. Acceptable responses to this question run between one and slightly over 1700. If the operator responds with the value zero or with no response at all (just enters Carriage Return), the system will allocate all available disk space on the diskette for one file.

*The user not wishing to consider Variable Length File diskettes should skip to section 4, below.

B. Number of Lines on Scratch Pad?

The operator must specify the largest number of lines that may exist on any file to be edited. Acceptable values are between zero and 254. Failure to allocate a scratch pad area large enough will result in an error message being displayed when an attempt is made to edit a file. The operator should not be tempted, however, to specify a scratch pad area far exceeding any reasonable requirement of the system since this will needlessly reduce the maximum number of files which may be stored on the diskette.

C. Maximum Number of Characters Per Line?

Accepted values for this response are between 1 and 255. The character count should include printable and nonprintable (e.g., control codes, escape sequences) characters. CRT terminals have a typical line length of 80 characters. If this parameter is specified to be greater than 128, the diskette space required for the scratch pad will be double what it would have been if 128 or less had been specified.

Note: This parameter should be specified as 86 when diskettes are to be used with Dataspeed 40/1 terminals.

D. Maximum Number of Characters Per File Name?

The acceptable response for this question is any number between 1 and 20. If the value zero is given, the value 20 will actually be used as it is not meaningful to define file names as having a maximum of zero characters. If any value greater than 20 is specified, the question will be repeated. This process will continue until an acceptable value has been entered.

E. Maximum Number of Characters in Extension?

The acceptable response for this question is any number between 0 and 12. If a value exceeding 12 is entered, the question will be repeated as above.

3. *VARIABLE LENGTH USER DISKETTE PARAMETERS

The following variables will be defined when building Variable Length File User diskettes:

1) Maximum number of file slots per diskette.

2) Number of lines on scratch pad.

3) Maximum number of characters per line.

4) Maximum number of characters in file name.

5) Maximum number of characters in extension.

A Comm-Stor II Variable Length File User diskette can store approximately 240,000 characters of information. This storage space is shared among file names, file name extensions, and the area set aside for the scratch pad. Obviously, if any of these items increases in size, the space available for the others is reduced. A definite trade-off therefore exists in the selection of these file parameters. When the operator has specified all the parameters listed in the above table, the Configurator calculates the maximum number of files which may be stored on the diskette.

The operator may either build diskettes as specified or change the file parameters and re-examine the results. The initial creation of User diskettes may involve some juggling of parameters to achieve an optimum result. A table is presented in Appendix B of this manual to assist the operator in selecting these parameters. This table is intended as an initial guideline to provide the operator with a reasonable starting point. The diskette parameters may then be "trimmed" to obtain an acceptable result.

A. Maximum Number of File Slots Per Diskette

The smallest possible file that can be entered on a diskette will occupy at least 1 sector. Therefore, depending on how the other parameters are specified, the maximum number of file slots available on one Variable Length User Diskette will be about 1800. The system will automatically default to a maximum number if a higher than possible number is specified. An important factor to remember is that, as this number is increased, the physical size of the directory on the diskette increases, thereby subtracting from the space available for actual file storage. The smallest possible Directory size is one track; the largest is 19 tracks (each track contains 26 sectors).

B. Number of Lines on Scratch Pad?

The operator must specify the largest number of lines that may exist on any file to be edited. Acceptable values are between zero and 254. Failure to allocate a scratch pad area large enough will result in an error message being displayed when an attempt is made to edit a file that is too long. The operator should not be tempted, however, to specify a scratch pad area far exceeding any reasonable requirement of the system since this will needlessly reduce the data which may be stored on the diskette.

C. Maximum Number of Characters Per Line?

Accepted values for this response are between 1 and 255. If this parameter is specified to be greater than 128, the diskette space required for the scratch pad will be double what it would have been if 128 or less had been specified.

D. Maximum Number of Characters Per File Name?

The acceptable response for this question is any number between 1 and 20, inclusive. If the value of zero is given, the value 20 will actually be used as it is not meaningful to define file names as having a maximum of zero characters. If any value greater than 20 is specified, the question will be repeated. This process will continue until an acceptable value has been entered.

E. Maximum Number of Characters in Extension?

The acceptable response for this question is any number between 0 and 12. If a value exceeding 12 is entered, the question will be repeated as above.

4. ADDITIONAL PARAMETERS

Since Comm-Stor II uses standard 3740 compatible diskettes, it is possible to read these diskettes in 3740 compatible equipment 3740 diskette specifications require that Track 73 is the last track normally used on a diskette. Tracks 74, 75 and 76 are reserved and in some cases used as replacement tracks if a defective track is found somewhere on the diskette. For this reason, users who use their diskettes with 3740 equipment should not place file data on Tracks 74 through 76. Those users who do not require compatibility with 3740 type equipment may specify at this time that these spare tracks be allocated for file storage. This will result in about a 5% increase in the total number of characters which may be held on the diskette. Comm-Stor II therefore asks the question "USE IBM SPARE TRACKS?" The operator may respond with either a Y or N.

At this point, Comm-Stor II will display the number of tracks allocated for the Directory and the number of files which may be stored on the diskette. Following this, the question, "BUILD DISKS?" will be asked. If the operator responds with a letter N, the diskette creation process will be terminated, and the operator will be returned to the normal beginning of the Configurator and be prompted for a command with the usual (.). If the operator responds with a Y, Comm-Stor II will display a short list of instructions and then print an asterisk (*). When the asterisk appears, the operator should open the door on the disk drive and remove the Configuration diskette. As the door opens, a second asterisk will be displayed.* Place a blank diskette into the disk drive and close the door. If the diskette has already been used as a Comm-Stor II diskette, the previously stored information will be erased and replaced with a new Directory, etc. When the front panel READY light flashes on, the cursor or printhead on the operator's terminal will be returned to the beginning of the line. At this point, type the letter G. The front panel BUSY light will then illuminate, and the User diskette will be created. When the User diskette has been successfully built, an asterisk will be displayed on the operator's terminal. The operator may then remove the diskette which has just been created, place another blank diskette in the drive, close the door and type the letter G again.

To return Comm-Stor II to its normal mode of operation, type a [←T] after the second asterisk instead of the letter G. Comm-Stor II will simulate the effect of depressing the RESTART button and return to its normal mode of operation.

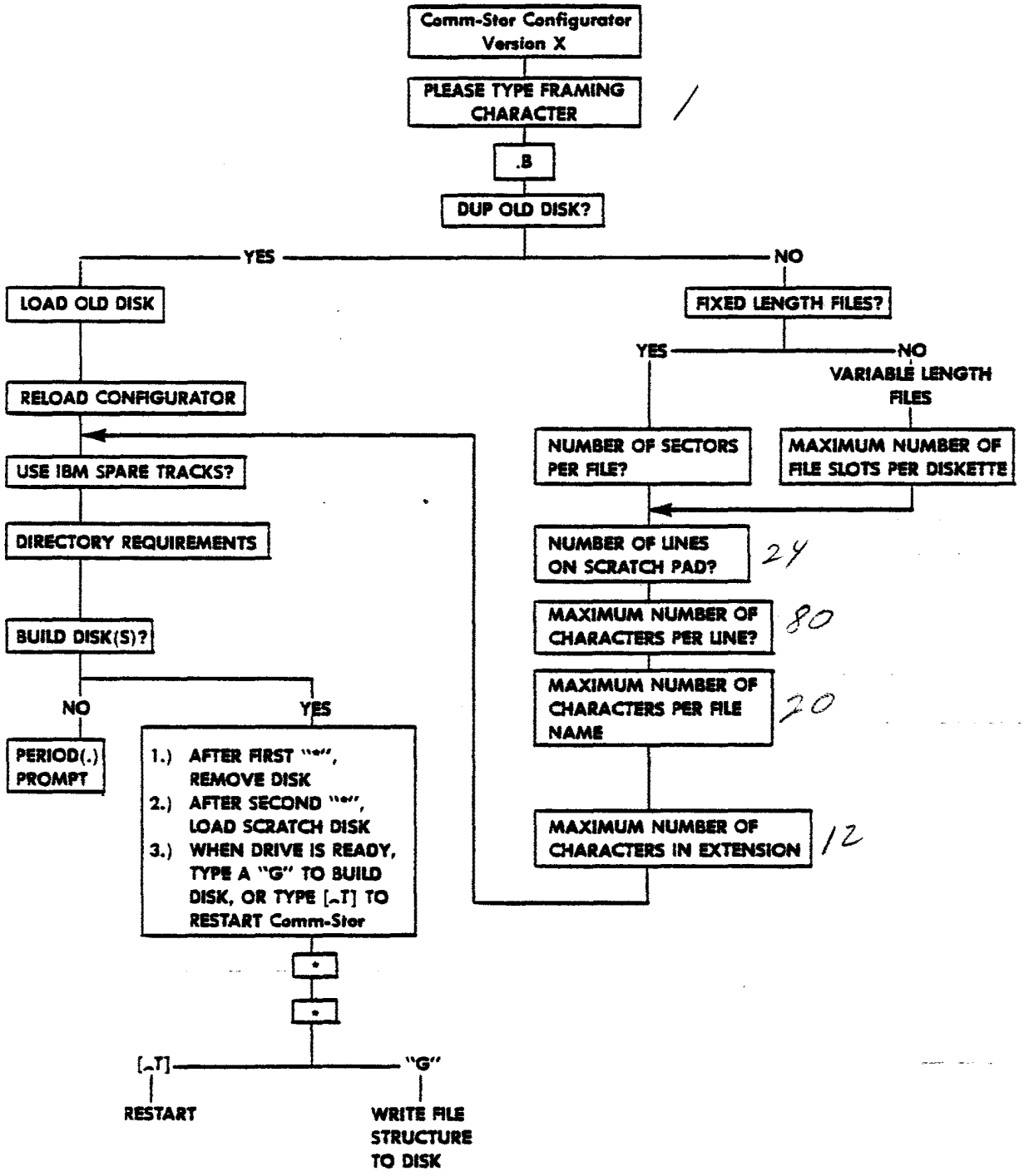
CAUTION: IF THE CONFIGURATOR IS LEFT IN THE DRIVE AND THE OPERATOR INSERTS A BLANK DISKETTE INTO THE DRIVE AND TYPES "G", THE CONFIGURATOR WILL BE DESTROYED.

The operator should note that if an error occurs in reading from or writing to the diskette at any time during the configuration or diskette creation process, Comm-Stor II will display an appropriate error message and halt. To continue in any form, the operator must depress the RESTART button and proceed normally from the beginning of the Configurator.

This concludes the chapter on building User Diskettes. The diskette building process creates valid Variable Length File User diskettes and Fixed Length File User diskettes. At this point, the newly created diskettes are initialized with a blank Directory, a blank file slot area, a scratch pad area of specified length and a small block of information (inaccessible to the operator) which identifies this diskette as a Comm-Stor User Diskette. Those users having a dual drive system may make any desired number of User diskettes by using the COPY command. The entire procedure is illustrated on page 13-5.

*An extra Line Feed will also be displayed on Dataspeed 40/1 terminals.

BUILDING USER DISKETTES



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CHAPTER 14

STANDARD FACTORY REFRESH

If at any time during the Configuration process the operator wishes to refresh the system with the standard factory configuration values, enter a

.R[CR]

on the terminal.

The system will respond with 'SURE?". Respond with a "Y" for YES.

Refer to Appendix A for the list of factory refresh values.

CAUTION: THIS PROCEDURE WILL ERASE ANY CONFIGURATION CHANGES MADE BY THE USER. IT IS RECOMMENDED THAT A REFRESH DISKETTE REFLECTING THESE CHANGES BE CREATED BEFORE EXECUTING THIS COMMAND.

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APPENDIX A

CONFIGURATION PARAMETER LISTING

Below is a complete listing of configuration parameters. The factory standard values (with which all new units are shipped) are shown in parentheses.

1: ASCII DATA? (YES)
2: SEND EOT AFTER EACH MODEM REQUEST (NO)
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: TRANSMIT "END OF TRANSMISSION" CHARACTER? (NO)
11: "END OF TRANSMISSION" CHARACTER ([^D])
12: "RESET" CHARACTER [^T])
13: SPACE CHARACTER FOR SYSTEM MESSAGES ( )
14: FIRST CHARACTER OF ESCAPE SEQUENCE ([ESC])
15: PARITY ERROR SYMBOL (?)
16: "STOP SEND/START SEND" OPTION (0)
17: "STOP SEND" CHARACTER (TO COMPUTER) ([^S])
18: "START SEND" CHARACTER (TO COMPUTER) ([^Q])
19: "HOLD" CHARACTER (FROM COMPUTER/TERMINAL) ([^S])
20: "RESUME" CHARACTER (FROM COMPUTER/TERMINAL) ([^Q])
21: OUTPUT NUMERICAL ERROR MESSAGES? (NO)
22: SEND ERROR MESSAGES TO MODEM? (NO)
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 #3 ([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])
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: BINARY TERMINAL DATA
PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS
INCLUDING FIXED BITS (IF ANY) (8)
39: TERMINAL INTERFACE CONTROL (11110)
40/1 TERMINAL? (NO)
40: DOES TERMINAL PROVIDE "DATA TERM READY"? (NO)
41: HALF DUPLEX MODEM? (NO)
42: **FOR HDX ONLY** TURN AROUND LINE AFTER EVERY CHARACTER? (YES)
43: **FOR HDX ONLY** MODEM TURNAROUND CHARACTER ([CR])
44: **FOR HDX ONLY** SECONDARY (SUPERVISORY) CHANNEL AVAILABLE? (NO)
45: **FOR HDX ONLY** "REQUEST TO SEND" TIMEOUT [MILLISECONDS] (200)
46: **FOR HDX ONLY** "SECONDARY CARRIER DROPPED" OPTION (0)
47: WAIT AFTER EOL FOR PROMPT OR AFTER ETX FOR ACK? (NO)
48: CHARACTER TO INITIATE WAIT PERIOD ([ETX])
49: WAIT FOR PROMPT BEFORE STARTING TRANSMISSION? (NO)
50: "PROMPT" OR "ACKNOWLEDGE" CHARACTER ([^F])
51: "RETRANSMIT FILE" CHARACTER ([^U])
52: IGNORE "NULL" CHARACTER FROM MODEM? (YES)
53: MODEM "NULL" CHARACTER ([NULL])
54: IS ATTACHED INSTRUCTION ECHOED? (NO)
55: SUBSTITUTE MODEM PARITY ERRORS WITH ERROR SYMBOL? (YES)
56: CHECK FOR MODEM FRAMING ERRORS? (NO)

57: INACTIVITY TIMEOUT(SECONDS) (INACTIVE)
58: NORMAL MODEM DATA
PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS
INCLUDING FIXED BITS (IF ANY) (8)
EIGHTH DATA BIT (0)
59: BINARY MODEM DATA
PARITY—EVEN/ODD/NONE (NONE)
NUMBER OF DATA BITS
INCLUDING FIXED BITS (IF ANY) (8)
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 AND
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: SYSTEM COMMAND CHARACTER—MODEM
ONLY (,)
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: "ECHO MODE" COMMAND (EM)
92: "ECHO EXIT" COMMAND (EX)
93: "INCLUDE MODE" COMMAND (IM)
94: "INCLUDE MODE EXIT" COMMAND (IX)
95: "LOAD EXTENSION" COMMAND (LE)
96: "LOAD INITIAL VALUE" COMMAND (LI)
97: "MONITOR MODE" COMMAND (MM)
98: "MONITOR MODE EXIT" COMMAND (MX)
99: "PRINT" COMMAND (P)
100: "PRINT DIRECTORY" COMMAND (PD)
101: "RECEIVE" COMMAND (R)
102: "RECEIVE AUTOMATIC" COMMAND (RA)
"RENAME" COMMAND (RE)
103: "SEND" COMMAND (S)
104: "SEND DIRECTORY" COMMAND (SD)
105: "SEND STATUS" COMMAND (SS)
106: "SEQUENTIAL MODE" COMMAND (SM)
107: "ALPHA MODE" COMMAND (AM)
108: "STANDBY MODE" COMMAND (SB)
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 ([)
128: CHARACTER TO END FORMS VARIABLE
FIELD (])
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: ANSWERBACK MESSAGE (**NONE**)
139: CHARACTER TO INITIATE ANSWERBACK MESSAGE ([⌐E])
140: USER COMMAND TABLE (**NONE**)
141: SELF-START ON POWER-UP OR RESTART? (NO)
142: SEND ANSWERBACK MESSAGE AFTER INITIAL CONNECTION? (NO)
143: INHIBIT AUTO LINEFEED TO MODEM PORT? (NO)
144: TERMINAL/MODEM BUFFER SIZES (00)
145: LOWER DSR DURING STANDBY? (NO)
146: USE EIA LINES TO CLOSE FILES? (NO)
147: SELF-START ON AUTO-ANSWER? (NO)
148: INHIBIT MONITOR MODE ON SEND? (NO)
149: RAISE RTS AFTER RECEIVING EOT? (NO)
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 FEATURE ENABLED? (NO)
154: DOES TERMINAL HAVE CURSOR CONTROL? (NO)
155: PREPRINT PAGE? (NO)
156: PREPRINT LINE? (NO)
157: SKIP INTERMEDIATE LINES? (NO)
158: "SKIPPED LINE" CHARACTER (-)
159: ENABLE REDISPLAY? (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 OVER-RIDE" 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 OF SKIPPED PAGES? (NO)

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APPENDIX B

DISKETTE CAPACITY CHART

The table below is intended to provide the operator with an initial guideline in the selection of file parameters. File size is expressed in Sectors (1 sector= 128 characters). The scratch pad area is specified as two lines for each sector of configured file length (80 chars/line). IBM spare tracks are not used.

Sectors Per File	Characters Per File Name	Characters Per Extension	Files Per Diskette
1	4	0	1716
1	8	0	1664
1	16	0	1561
1	20	12	1397
2	4	0	897
2	8	0	884
2	16	0	846
2	20	12	793
4	4	0	455
4	8	0	449
4	16	0	442
4	20	12	429
8	4	0	230
8	8	0	227
8	16	0	227
8	20	12	224
16	4	0	113
16	8	0	113
16	16	0	113
16	20	12	112
32	4	0	56
32	8	0	56
32	16	0	56
32	20	12	56
64	4	0	27
64	8	0	27
64	16	0	27
64	20	12	27
128	4	0	12
128	8	0	12
128	16	0	12
128	20	12	12
256	4	0	6
256	8	0	6
256	16	0	6
256	20	12	6

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APPENDIX C

AMERICAN STANDARD CODE FOR INFORMATION INTERCHANGE (ASCII)

b7 b6 b5 / Bits					0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b4	b3	b2	b1	COLUMN / ROW	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	'	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	|
1	1	0	1	13	CR	GS	—	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	↑	n	~
1	1	1	1	15	SI	US	/	?	O	←	o	DEL

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APPENDIX D

SYSTEM DELAYS

Comm-Stor II has a Directory which contains a cross-reference between user assigned file names and file addresses on the diskette. Being disk-based, Comm-Stor II requires address searching on the diskettes before either reading or writing can take place anywhere on the diskette. Delays may occur before Comm-Stor II responds to certain commands. The important system delays are explained below.

1. Delays after an Enter or Receive Command:

After Comm-Stor II receives an ENTER, ENTER AUTOMATIC, RECEIVE, RECEIVE AUTOMATIC or SAVE command, the system locates a vacant entry in the Directory and finds the starting position on the diskette where the data will be maintained. The amount of delay depends on the number of files on the diskette, the maximum number of files, and the maximum number of characters in the file name.

The operator will know the delay is over when Comm-Stor II displays a Carriage Return and Line Feed. The computer will know the delay is over when the Attached Message is sent out.

Terminal and/or modem input buffering may be used on those Comm-Stor II systems with the 4K RAM Option. This eliminates the need for pausing between commands and data (Refer to Appendix H).

2. Delays after an Enter or Receive Operation:

After the ETX character is received signifying termination of an ENTER or RECEIVE command, Comm-Stor II must "close" the file by entering certain information in the Directory. When data is entered from the terminal, the bell will sound on the terminal when Comm-Stor II is ready for the next command.

Note: Terminal or modem buffering may be used to allow data to be entered immediately after the ENTER or RECEIVE operation.

3. Delays During the Reception of Data:

Under normal conditions, Comm-Stor II receives a continuous stream of data up to 4800 baud without requiring pauses in the data stream. However, if a search error occurs while Comm-Stor II is looking for a diskette address, the system may be unable to handle the incoming data. If data is lost, an Overrun Error occurs. To prevent this error, the system may be configured to send a STOP SEND character to the computer, and send a START SEND character after Comm-Stor II has "caught up".

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APPENDIX E

INTERFACE SIGNAL CONNECTIONS

A. EIA RS-232-C 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	Secondary Request to Send	X	in	X	out	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		

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

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APPENDIX F

LINE TERMINATION/ AUTO LINE FEEDS

1. Parameter #3 in the Configuration determines the character which will be interpreted by Comm-Stor II as the End of Line character. The EOL character in Parameter #3 applies to all ports. The standard value is [CR].

2. Parameter #5 in the Configuration determines the character which will optionally be added after the End of Line character to cause a line feed operation. The standard value is LF. NOTE: Auto Line Feeds are not stored on diskette unless the LF is entered into data.

3. Parameter #4 determines whether or not the LF character will be added when an EOL character is entered. If Parameter #4 is configured to add LF, the Line Feed will always be added to data echoed to the terminal or files displayed at the terminal.

   If Comm-Stor II is put into the Echo Mode, the Line Feed will also be added to Modem transmission. If this is undesirable, Parameter #143 may be configured to inhibit auto-line feeds at the modem port.

4. Echo Mode—At the terminal, the Echo Mode creates an artificial echo of Data transmitted via the modem. This is useful where the remote device is a terminal and printer or a Comm-Stor II that does not echo.

   Additionally, if Parameter #4 is configured to add a Line Feed after EOL[CR], Comm-Stor II will add the LF to data transmitted via the modem port. This is because Comm-Stor II assumes that the remote device will require LF's in transmission as is typically the case with terminals and printers.

   However, if the remote device is a non-echoing computer and the Echo Mode is used for local echoing purposes, the auto-LF's at the computer might cause double line feeds or total data rejecton from the remote computer. If this is the case, Parameter #143 may be reconfigured to strip the auto line feeds from transmission if the Echo Mode must be used.

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APPENDIX G

RAM MEMORY ALLOCATION

Comm-Stor II uses the 4K Expanded RAM option for several different operations. This appendix will define the individual operations that use the option and the methods of handling different operations so that memory conflicts will not occur.

1. 3740 Format Option

The 3740 Format Option uses all of the 4K Expanded RAM option. Standard forms larger than 1024 characters should not be loaded when the 3740 format is loaded. Terminal and modem buffering (Parameter #144) must be reconfigured for zero buffer space or an error message will be displayed when an attempt is made to load the "3740 Format" disk.

2. Extended Forms Operations

A disk "RESTORE" operation always results in over-writing the form. Also, if Comm-Stor II is configured for terminal-modem buffering, the amount of memory allocated for buffering must be subtracted from 4K memory which normally could be used for Forms Operations.

3. Terminal Modem Port Buffering

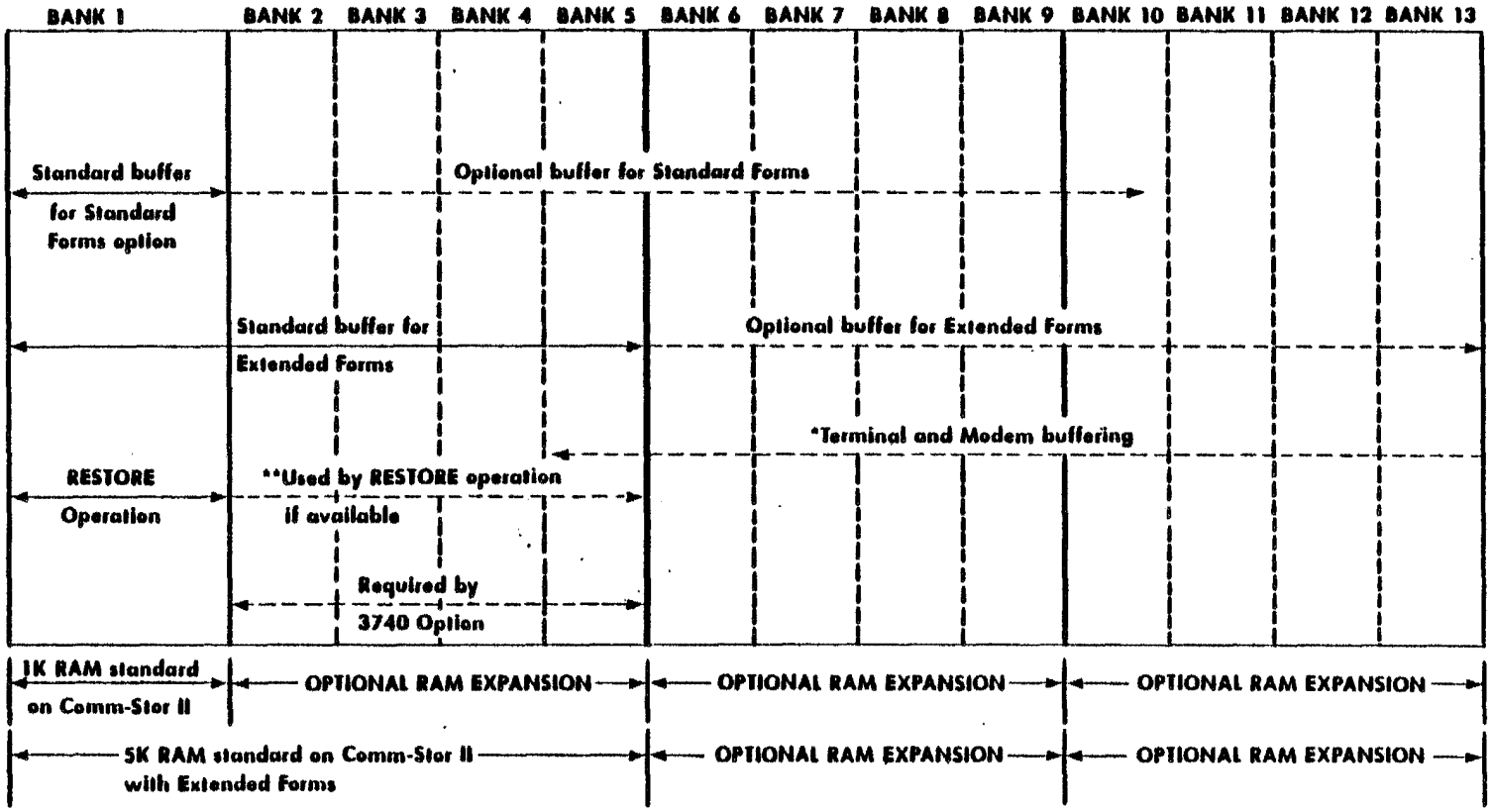
If Comm-Stor II is configured (Parameter #144) for input buffering, the 3740 Format Option cannot be used unless the system is reconfigured or refreshed. Forms operations will be limited by the amount of memory allocated for buffering.

Example: If the total amount of memory allocated for buffering is 3K, 1K of the Expanded RAM will be available for Forms.

4. RESTORE Operation

A disk "RESTORE" operation will always result in over-writing the 3740 Format or the current form loaded in memory. The system will not buffer terminal data when a RESTORE operation is performed. Modem buffering is limited to 1K characters during a RESTORE operation.

RAM MEMORY ALLOCATION



*Terminal and Modem buffering will reduce the amount of RAM available for the Forms Options Terminal and/or modem buffering is assigned starting with the highest Bank and working down. The combined maximum is 4K which may be divided between the terminal and modem in any combination of 1K increments.

**If additional RAM is available, the RESTORE command will automatically use BANKS 2, 3 and 4. It will also use BANK 5 if BANK 5 is not assigned as the modem buffer area.

APPENDIX H

TERMINAL/MODEM BUFFERING

Terminal and modem input buffering can be considered a type of intermediate data storage. Generally speaking, the disk drive can write data to the disk at a rate faster than data can be input to Comm-Stor II. However, overhead processes such as reading the Directory and search time prevent data from being written all of the time. For this reason, buffering may be used at the appropriate input port to allow Comm-Stor II to accept commands and data in a continuous stream without the normal delays required by Comm-Stor II.

Normally, when a command is entered into Comm-Stor II, a short delay is required from the time the command is entered to when the system is actually ready to accept or display data. Terminal and/or modem buffering allows data to be transferred to Comm-Stor II immediately after the command has been entered without having to pause. This feature is particularly useful when data is being entered from a terminal with memory or a remote computer (batch transmission).

ENTER (RECEIVE) Example:

When an ENTER or RECEIVE command is accepted by Comm-Stor II, the system scans the Directory of the diskette to determine if the file name has been previously used. It also verifies that user storage area is available. If the file name is not found during the Directory scan, the new file name is written in the appropriate location in the Directory. At that point the system begins to write data on the diskette. The operator normally is signaled to begin entering data by observing the return of the cursor to the beginning of the next line. When the ETX character is entered, the system again accesses the Directory. The character count and the number of entries is then written into the Directory. The operator alert character (Parameter #33) plus a carriage return and line feed are also sent to the terminal.

Reading the Directory and searching from the Directory to other parts of the diskette requires time. If data must be input in a continuous stream immediately following the command, buffering must be used to prevent a data overrun condition.

Several factors cause delays in the rate Comm-Stor II can accept data. Understanding these factors will help the user define the size of the terminal and modem buffers as well as understand the capabilities and limitations of buffered operation.

FACTORS CONTROLLING BUFFERED OPERATION

1. Quantity of Data

The number of characters which are sent in a batch transmission greatly affects the buffering operation. If the total number of characters in a batch transmission is less than the allocated buffer space, the other factors listed below do not have to be considered because the buffer can never overflow. However, if the total number of characters in a batch transmission is larger than the space allocated for buffering, care must be exercised with the other factors to prevent a data "overrun" condition.

2. Number of Stacked Commands (ENTER, RECEIVE)

A number of Enter and/or Receive commands with associated data files can be sent to Comm-Stor II as one batch transmission if the system is configured for buffering (Parameter #144). Each ENTER and/or RECEIVE command will require 2 Directory scans. The Directory scan is the most time consuming overhead process in the data-storage mode. Therefore, the number of commands which are entered as part of a batch transmission must be considered carefully.

When a SEND command (.S, .SS, .SD) is executed, any commands or data received at the modem port will be passed directly to the terminal and ***not*** buffered.

3. Size of the Directory

The size of the Directory depends on the number of entries on the diskette and the amount of space that is allocated for each file name and extension. If the size of the Directory is one or two tracks, Directory scans will take less than two seconds to complete.

Each additional track of Directory scanning will take approximately one-third of a second. If a User Diskette is set up for 20-character names and 12-character extensions, the first track of the Direc-

tory will provide storage for roughly 65 entries. Each additional track will provide storage for about 75 entries.

Example:

If a user diskette has 200 entries, the Directory will occupy nearly three full tracks. One complete Directory scan will therefore take approximately 2.5 seconds.

A User diskette with a completely full Directory, (1500 entries, 20-character names, 12-character extension will require about 7 seconds to complete one scan.

4. Transmission Rate

When Comm-Stor II is performing a Directory scan or a track/sector search operation, incoming data must be buffered or stored. At higher transmission rates, Comm-Stor II must buffer proportionally more characters than at lower transmission rates.

For example, if a particular ENTER command takes 2 seconds to process, the system will have to store 2 seconds worth of characters from the time the command is issued to the time data begins to be written on the diskette.

At 4800 bps, the character rate is 480 characters/second. Therefore, the system will have to buffer 960 characters of data before diskette writing actually starts to occur.

At 300 bps, the character rate is 30 characters/second. In this example, the system will only have to buffer 60 characters.

5. Condition of User Diskette

Comm-Stor II may be unable to read data contained on diskettes of marginal quality. However, Comm-Stor II automatically makes *several* attempts to read data on such disks before indicating an error condition. These "retries" often result in increased system delays. As system delays increase, the system gets farther "behind", resulting in the system being forced to buffer more data.

APPENDIX I

FULL/HALF DUPLEX MODEM COMMUNICATION

The following is a very basic description of Full and Half Duplex transmission and is presented as a tutorial for those who may be unfamiliar with data communication.

The descriptions assume that a Comm-Stor II is connected via normal telephone lines to a remote device, usually a computer.

Full Duplex, as described here, assumes Bell 103 and equivalent modems, including acoustic couplers; the Half Duplex description assumes Bell 202 and equivalent modems.

Full Duplex

In Full Duplex operation, data communication can occur in both directions simultaneously; this is because transmission takes place over two independent paths.

Both the local and remote modem always assert a carrier tone of a specific frequency on the line which allows simultaneous transmission in both directions.

Carrier tones are shifted slightly in frequency to indicate logical ones and zeros (Mark and Space). A steady tone indicates that no data is being transferred.

Data Path—Full Duplex

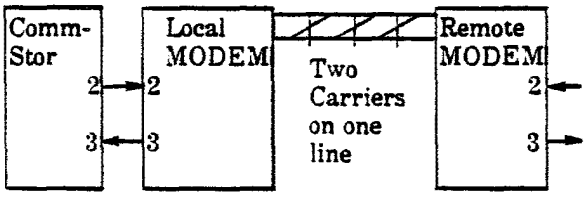


FIGURE I-1

Signal Descriptions

The following signals are used in a Full Duplex interface:

PIN 1—Chassis Ground
PIN 7—Signal Ground
PIN 2—Transmit Data

Transmit Data is serial data which is sent out of Comm-Stor II to the modem for transmission.

PIN 3—Receive Data

Receive Data is serial data sent from the remote location which is received by the local modem and input by Comm-Stor II.

PIN 4—Request To Send

In Full Duplex communication, this signal is always asserted by Comm-Stor II.

PIN 5—Clear To Send

In FDX communication, this signal from the modem is ignored by Comm-Stor II. However, Comm-Stor II will not send answerback on initial connections (Parameter #143) unless this signal is asserted. Some Full Duplex only modems do not provide this signal.

PIN 6—Data Set Ready

This signal indicates that the modem is ready for data transmission.

If a modem does not provide this signal, Parameter #60 may be reconfigured so Comm-Stor II will ignore its absence.

PIN 8—Carrier Detect

This signal from the modem indicates the presence of a carrier on the line. Both the local and remote carriers will cause this signal to be asserted by the modem. Comm-Stor II provides a visual indication of the Carrier Detect signal on the carrier front panel LED.

PIN 20—Data Terminal Ready

Comm-Stor II normally asserts this signal. However, Comm-Stor II will de-assert this signal for 300 ms to perform an auto-disconnect operation. This occurs after fail-

ure to establish a proper telephone connection 20 seconds after the ring indicator signal has occured or after the inactivity timer times out.

PIN 22—Ring Indicator

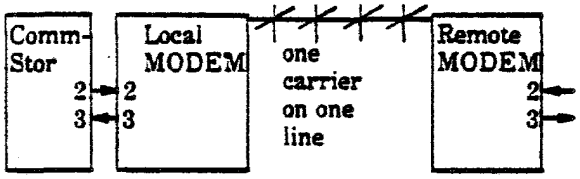
Signal from the modem which indicates the presence of a ring signal on the line.

Half Duplex

In Half Duplex operation, data transmission occurs in only one direction at a time. Therefore, control line handshaking must occur whenever data is transmitted over the line.

Whenever a Half Duplex terminal or computer is about to transmit over the line, its modem must assert a carrier signal on the transmission line.

Data Path—Half Duplex



Signal Descriptions

The following signals are used in a Half Duplex interface:

PIN 1—Chassis Ground

PIN 7—Signal Ground

PIN 2—Transmit Data

Transmit Data is serial data which is sent out of Comm-Stor II to the modem for transmission.

PIN 3—Receive Data

Receive Data is serial data sent from the remote computer which is received by the local modem and input to Comm-Stor II.

PIN 6—Data Set Ready

This signal indicates that the modem is ready for data transmission. If a modem does not provide this signal, Comm-Stor II may be reconfigured (Parameter #60) to ignore its absence.

PIN 8—Carrier Detect

This signal from the modem indicates the presence of a carrier on the line. The detection of the remote carrier will cause this signal to be asserted by the modem. Comm-Stor II provides a visual indication of the Carrier Detect signal on the carrier front panel LED.

PIN 4—Request to Send

In Half Duplex, whenever data is to be transmitted, Comm-Stor II asserts Request to Send which will cause the modem to put its carrier on the line.

An "Error Modem" will occur if an attempt is made to transmit data from Comm-Stor II (raise request to send) while the remote carrier is on the line.

PIN 5—Clear to Send

Once the Carrier Signal has stabilized, the modem asserts Clear To Send which prompts Comm-Stor II to transmit data.

PIN 20—Data Terminal Ready

Comm-Stor II normally asserts this signal. However, Comm-Stor II will de-assert this signal for 300 ms to perform an auto-disconnect operation. This occurs after failure to establish a proper telephone connection 20 seconds after the ring indicator signal has occurred or after the inactivity timer times out.

PIN 22—Ring Indicator

Signal from the modem which indicates the presence of a ring signal on the line.

Optional Secondary (Reverse) Channel Control

Some Half Duplex modems are equipped with a secondary channel which allows very low fre-

quency carrier transmission in the reverse direction. The secondary carrier is transmitted over the same telephone line the carrier is transmitted over; however, it is always transmitted from the opposite end.

The secondary carrier is not normally used to transmit data. Its presence on the line is used for transmission control and circuit assurance.

Comm-Stor II may be configured (Parameters #44 and 46) to use the secondary channel as a means of transmission control and circuit assurance. Refer to Chapter 5 for information regarding configuring these parameters.

PIN 11—Secondary Request to Send

When this signal is asserted, the modem will put a low frequency secondary carrier on the line.

PIN 12—Secondary Carrier Detect

This signal is asserted by the modem whenever the secondary carrier is received on the line by the modem.

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APPENDIX J

TERMINAL CONFIGURATION FOR Comm-Stor II WITH EXTENDED FORMS

TERMINAL	DATA-SPEED 40/2 TERMI-NAL*	LEAR SIEGLER VDP-400 ADM 1A 2 3A ALANTHUS 20X WESTERN UNION VIDEO 100	BEE-HIVE Minibee Superbee B550 PERKIN-ELMER FOX/OWL HEWLETT PACKARD 264X	HAZEL-TINE 1500	ADDS**** Regent 00 Consul X80 INTERTEC**** Intertube	INFOTON Vistar***	INFORMER 30X
Cursor Right Output	ESC C	^L	ESC C	^P	^F	^Y	^T
Cursor Left Output	←	^H	ESC D	^H	^U	^Z	^H
Cursor Up Output	ESC 7	^K	ESC A	^L	^Z	^\	^S
Cursor Down Output	ESC B	^J	ESC B	^K	^J	^]	^J
Home Cursor Output	ESC H	^^	ESC H	^R	^A	^H	^R
Clear Screen Output	ESC R	^Z**	ESC E	^\	^L	^L	^X

* DATASPEED 40/2 TERMINALS should be additionally configured as follows: Modem Off-line Alert Character (#33): ([NULL]), Auto Tab Character (#165): ([NULL]), Close Page Character (#167): ([DLE]), Verify Page Character (#168): ([SYN]), Carriage Return Character (#179): ([ESC]G).

** ADM 1A, ADM 2 use ESC:

*** INFOTON Vistar/GT should be configured as hardcopy (see page J-2).

**** ADDS Regent 200 and INTERTEC Intertube should be configured for Preprint Line rather than Preprint Page.

Note: For CRT Terminals with full cursor control—Configure the following Parameters as indicated:

Preprint Page:	Yes	Preprint Line:	No
Enable Redisplay:	Yes	Cursor Control:	Yes

For Hardcopy Terminals—Configure the following Parameters as indicated

Cursor Left Output: \
Cursor Right Output: space
Cursor Down Output: linefeed

Preprint Page:	No	Preprint Line:	No
Enable Redisplay:	No	Cursor Control:	No

APPENDIX K

SYSTEM CONFIGURATION CHANGES

This appendix permits the user to record those Configuration Parameter values that differ from the standard factory values. Two distinct system configurations may be recorded. The table should be completed immediately after a system is reconfigured, and is meant to reflect a particular system's configuration.

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
1	YES		
2	NO		
3	[CR]		
4	YES		
5	[LF]		
6	[CR]		
7	[LF]		
8	[ETX]		
9	NO		
10	NO		
11	[⌐D]		
12	[⌐T]		
13	SPACE		
14	[ESC]		
15	?		
16	Ø		
17	[⌐S]		
18	[⌐Q]		
19	[⌐S]		
20	[⌐Q]		
21	NO		
22	NO		
23	[CR], NONE, 1		
24	[CR], NONE, 1		
25	[CR], NONE, 1		
26	[CR], NONE, 1		
27	[RUB]		
28	[BS]		
29	[⌐X]		
30	23		
31	NO		
32	YES		
33	[⌐G]		
34	NO		
35	YES		
36	[NULL]		
37	NONE, 8, Ø		
38	NONE, 8		
39	11110, NO		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
40	NO		
41	NO		
42	YES		
43	[CR]		
44	NO		
45	200		
46	0		
47	NO		
48	[ETX]		
49	NO		
50	[^F]		
51	[^U]		
52	YES		
53	[NULL]		
54	NO		
55	YES		
56	NO		
57	INACTIVE		
58	NONE, 8, 0		
59	NONE, 8		
60	YES		
61	YES		
62	NONE, 8, 0		
63	11110		
64	NO		
65	NO		
66	YES		
67	SPACE		
68	/		
69	<		
70	>		
71	+		
72	#		
73	*		
74	?		
75	**UNUSED**		
76	Y		
77	.		
78	,		
79	1		
80	2		
81	BM		
82	BP		
83	BT		
84	C		
85	CN		
86	D		
87	DD		
88	DS		
89	E		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
90	EA		
91	EM		
92	EX		
93	IM		
94	IX		
95	LE		
96	LI		
97	MM		
98	MX		
99	P		
100	PD		
101	R		
102	RA, RE		
103	S		
104	SD		
105	SS		
106	SM		
107	AM		
108	SB		
109	WE		
110	WP		
111	YES		
112	,		
113	/		
114	:		
115	ED		
116	SV		
117	A		
118	D		
119	I		
120	=		
121	Q		
122	L		
123	N		
124	R		
125	S		
126	YES		
127	[		
128	]		
129	FC		
130	FV		
131	FX		
132	[⌐Y]		
133	[⌐L]		
134	[⌐Z]		
135	[⌐O]		
136	[⌐N]		
137	[CR]		
138	NONE		
139	[⌐E]		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
140	NONE		
141	NO		
142	NO		
143	NO		
144	00		
145	NO		
146	NO		
147	NO		
148	NO		
149	NO		
150	FC		
151	FV		
152	FX		
153	NO		
154	NO		
155	NO		
156	NO		
157	NO		
158	—		
159	NO		
160	[⌐A], [⌐A]		
161	[⌐L]		
162	[⌐B], [⌐B]		
163	[CR], [CR]		
164	[TAB], [TAB]		
165	[⌐Z]		
166	[⌐K]		
167	[⌐P]		
168	[⌐V]		
169	[⌐Y]		
170	[ETX]		
171	[⌐O]		
172	[⌐N]		
173	[⌐R]		
174	[RUB]		
175	\		
176	SPACE		
177	[⌐K]		
178	[LF]		
179	[CR]		
180	[⌐⌐]		
181	[⌐Z]		
182	[⌐W]		
183	*		
184	.		
185	NONE		
186	—		
187	?		
188	#		
189	SPACE		

PARAMETER NUMBER	STANDARD FACTORY VALUE	SYSTEM VALUE	SYSTEM VALUE
190	NO	_____	_____
191	YES	_____	_____
192	[CR]	_____	_____
193	[CR]	_____	_____
194	,	_____	_____
195	;	_____	_____
196	2	_____	_____
197	<, >	_____	_____
198	NO	_____	_____

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