WICAT

T7000

User Manual

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MANUAL INTENT STATEMENT

This manual describes the hardware and peripherals available with the WICAT System 100. The information contained in the manual is subject to change without notice and should not be construed as a commitment by WICAT Systems Incorporated. WICAT Systems Incorporated assumes no responsibility for any errors that may appear in this manual.

CHAPTER 1

REMOVING THE TERMINAL

A. Unpacking the terminal.

    1. Open the box by carefully prying
       the lid free.

    2. Remove the lid.

    3. Remove the packing materials
       until you can see the terminal.

    4. Do not discard any papers received
       with the terminal.

    5. Gently lift and seperate the T7000
       terminal from the box.

    6. Set the T7000 on a flat, sturdy
       surface to inspect for shipping damages.

B. Inspecting the T7000 for damages.

    1. Look over the entire terminal for
       shipping damages.

    2. If you find any damages, call WICAT
       at 1-800-453-1362.
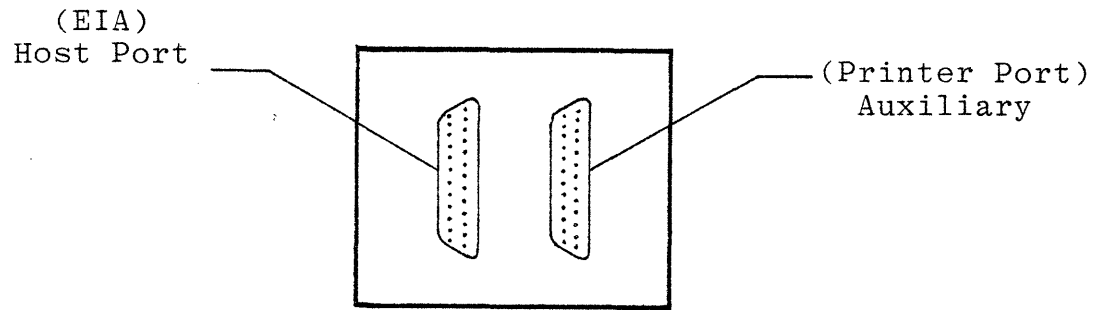   DO NOT try to fix them yourself.

CHAPTER 2

TURNING ON THE T7000 VIDEO TERMINAL

A. Set the terminal on a sturdy, smooth
    flat surface.

B. Plug in the keyboard.
    If the keyboard is not already attached
    to the terminal, take the cord with the
    two plastic ends and plug either end into
    the keyboard. Push the plastic end into
    the keyboard port until you hear a click.
    Then push the other plastic end into the
    terminal port, also until you hear a click.

C. Getting the cursor on the screen.

    1. Find the on/off switch on the right hand
    side of the terminal. Flip the switch on.
    When you hear a beep, the terminal is on.

    2. When the screen "warms up", the
    cursor will appear in the top left hand
    corner of the screen.

D. Two ports.

1. There are two ports located in the back of the terminal. Both of the ports are specified in the following diagram:

(EIA)
Host Port _____   _____ (Printer Port)
                                              Auxiliary

E. How the T7000 terminal (EIA) Host port is
    configured.

        Baud Rate = 9600
        Parity = disabled
        Stop Bits = 2
        Data Bits = 7

The terminal comes up in full duplex on line.

("ON LINE" LED on keyboard should be lit).

Now you are ready to talk to the computer.

CHAPTER 3

THE MONOCHROME VIDEO TERMINAL FUNCTIONS

INTRODUCTION

The monochrome video terminal is an interactive device used to
enter, display, and send information to a host computer, and to
receive and display information from that computer.
Display information includes all standard ASCII characters.

TEXT MODE

The CRT displays 80 characters per row and 25 rows per frame
on a 12" diagonal screen. The 25th row is reserved as a utility
row to be used for setup command or user control. The horizontal
X vertical pixel size of the character matrix is 10x12. Two
types of character generators are available. They are as follows:

> 1. Standard 128 ASCII character set including
>   96 characters and optional display of 32
>   control characters.

> 2. Alternate character set as specified by the
>   user.

The terminal conforms to the following standards: (however, not all the functions are implemented)

1. Text processing and data entry commands conform to ANSI standard ESC sequences for cursor control, editing, and text attribute selection found in ANSI X3. 64-1979, and ANSI X3. 41-1974.

OPTIONAL TOUCH PANEL

The touch panel may be mounted in place of the terminal case bezel. It consists of scanning infrared beams. Infrared LED emitters are mounted on the left side and bottom of a PC (printed circuit) board frame. Phototransistor infrared detectors are mounted opposite the LEDs along the right side and top. This arrangement produces an X-Y matrix. Each X-Y beam intersects at a touch point. The PC board frame is mounted around the CRT so that the scanning infrared beams are parallel to and directly in front of the CRT face. Touching the screen with a finger or other object "breaks" an X and a Y beam. The processor then "reads" the X and Y coordinates.

The touch matrix is 32 lines in X and 24 lines in Y, and has 768 active points. The matrix size is 8 inches in the X direction and 6 inches in the Y direction. The interface is an 8-bit parallel header on the processor bus with two enable lines and one interrupt line.

CHAPTER 4

THE TERMINAL STATUS ASSIGNMENTS

Terminal status is set from the keyboard. The information is stored in Nonvolatile RAM, which will remain until changed even though the terminal is powered down.

FUNCTION	SELECTIONS
Power (CRTC)	50Hz or 60Hz
Cursor	Underline, block, steady, or blinking.
Video	Normal or reverse
Keyclick	ON or OFF
Character Set	Standard ROM or Alternate ROM
Full/Half Duplex	Determines whether local echoing of characters takes place in the terminal.
On Line/Local	On line or local modes.
Tab Stops	Set/reset
Auto Wrap	End of line wrap to next line or overstrikes characters typed after EOL.
Host Parity Sense	Even/odd
Host Data Bits	7/8
Host Baud Rate	50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 19200.
Host Stop Bits	1 or 2
Printer Baud Rate	50, 75, 110, 134.5, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 19200.
Printer Parity	Enabled/disabled
Printer Parity Sense	Even/odd
Printer Data Bits	7/8
Printer Stop Bits	1/2

HOW TO MAKE CHANGES WITHIN TERMINAL STATUS

1. Press the setup key to enter Terminal Status (setup mode).

   A. The terminal will respond on the 25th line
       giving you 1 of 5 status summary lines.

2. To change the attributes.

   A. A line will come up and one of the attributes
       will be blinking. That attribute can be changed
       by pressing the space bar.
   B. The vertical cursor control keys causes
       new lines to appear.
   C. The horizontal cursor control keys will step
       across the current line.

3. To make the changes permanant, type PERM (upper case).

4. Press the setup key to leave Terminal Status Mode.

5. If PERM was typed while in Terminal Status, the
    the system displays "making changes permanent".

CHAPTER 5

TEXT COMMANDS AND SEQUENCES

The T7000 is set up to run on a Standard RS232 interface. It
has a built-in X-ON X-OFF feature and will write text commands
through a series of well-defined escape sequences in any language.
The following is an explanation of syntax:

    All Pn parameters are optional and must be numeric. If
    unspecified, the Pn parameter defaults to 1. (A value
    of 0 is also 1).
    Use Ps to specify one or a string of parameters separated
    by semicolons.

ALL CHARACTERS TYPED ONTO THE SCREEN WHICH CONSTITUTE THE ESCAPE
SEQUENCE COMMANDS ARE INVISIBLE!

The following is a list of escape sequences to invoke the various
commands:

CURSOR POSITIONING

If Pn is omitted for any of the first 4 commands the default value
is assumed to be 1, ie: <ESC> [A moves the cursor up one
position in the current column.

1. MOVE CURSOR UP

    The cursor will be positioned Pn lines UP from its current
    positon. The current column position remains unchanged. If
    the cursor is currently at the top of the screen, no action is
    taken.

    <ESC> [Pn A

2. MOVE CURSOR DOWN

   Positions the cursor Pn lines DOWN from its current position.
   The current column position remains unchanged. If the cursor is
   at the bottom of the screen, no action is taken.

   <ESC> [Pn B

3. MOVE CURSOR FORWARD

   Positions the cursor Pn columns RIGHT of its current position.
   The current row position remains unchanged. If the cursor is
   at the right edge of the, screen no action is taken.

   <ESC> [Pn C

4. MOVE CURSOR BACKWARD

   Positions the cursor Pn columns LEFT of its current position.
   The current row position remains unchanged if the cursor is at
   the LEFT edge of the screen.

   <ESC> [Pn D

5. DIRECT CURSOR ADDRESSING

   Moves the cursor to the location specified Pl;Pc (line number,
   column number). The screen is defined so that the upper left
   hand corner is defined as 1,1. If any of the values are greater
   than the maximum range 1..25 for columns and 1..80 for rows, the
   cursor will be positioned at the high maximum line/column.

   <ESC> [Pl ; Pc H

     NOTE: if either parameter is omitted then the default value is 1.
         Thus: <ESC> [; 5 Leaves the cursor in LINE 1, COLUMN 5.
               <ESC> [H   Leaves the cursor in LINE 1, COLUMN 1.

6. INDEX

   Moves the cursor down one line without changing column postions.
   This command is identical to MOVE CURSOR DOWN except, if the
   cursor is at the bottom line, the screen scrolls up one line.

   <ESC> D

7. REVERSE INDEX

Performs the exact function as MOVE CURSOR UP except, if the
cursor is at the top line, the screen scrolls down one line.

<ESC> M

8. NEXT LINE

Moves the cursor to the first column of the Pn th line DOWN.
If the cursor is on the bottom line, the screen scrolls up
one line.

<ESC> [Pn E

9. PREVIOUS LINE

Moves the cursor to the first column of the Pn th previous line.
If the cursor is on the top line, the screen scrolls down one
line.

<ESC> [Pn F

10. SAVE CURSOR

Pushes on to a stack. A maximum of 5 cursor positions can be
stacked. If any more than 5 successive commands are sent with
no matching restore cursors, the oldest saved is lost.

<ESC> 7

11. RESTORE CURSOR

Restores the cursor address. If more RESTORES are invoked
than SAVES, the RESTORE becomes a NOP (no operation).

<ESC> 8

12. CURSOR BACKWARD TAB

Moves the cursor to the Pn th preceding tab position. If no
more preceding tab positions are found, the cursor moves to
column 1.

<ESC> [Pn Z

13. CURSOR HORIZONTAL TAB

Moves the cursor to the Pn th subsequent horizontal tab
position. If no more tab positions are on the line, the cursor
moves to the last position on the line.

<ESC> [Pn I

EDITING FUNCTIONS

The following commands implement screen erasing capabilities.
The following descriptions assume the same format as previously
defined in the cursor positioning commands.

1. SCREEN ERASE

    Erases all or part of the screen using the current cursor
    position as a base address. The command has 3 optional
    parameters defined below:

        0.....erase from current cursor position to the
              end of the screen, including current cursor
              position.

        1.....erase from begining of screen to the current
              cursor position, including current cursor
              position.

        2.....erase entire screen.

    Option 2 moves the current cursor position to the upper left
    corner of the screen, the HOME position. Erasure is
    accomplished by filling character positions with blanks.
    CURSOR POSITION remains unmodified except as explained for
    option 2.

    <ESC> [Pn J

2. LINE ERASE

    Erases the current line. The current cursor position is
    used as a base and erasure is done as follows:

    > 0.....erase from the current position to the end of
    >   the current line, including the current cursor
    >   position.

    > 1.....erase from begining of the line to the current
    >   cursor position, including the current cursor
    >   position.

    > 2.....erase entire line.

    Option 2 moves the cursor to the begining of the erased line.
    CURSOR POSITION remains unmodified except as explained for
    option 2.

    <ESC> [Pn K

3. CHARACTER ERASE

    Erases the specified number of characters starting at the
    cursor position. The default number is one character. This
    command will only operate on the current line (i.e., character
    erasure will not cross line boundaries).
    CURSOR POSITION remains unmodified.

    <ESC> [Pn X

4. ERASE AREA

Erases all or part of a defined area that was defined by the
DAQ command. This command has 3 optional parameters defined
below:

  0.....erase from the current position to the end of the
    current defined area, includes the current position.

  1.....erase from the beginning of the current defined area
    to the current position, includes the current cursor
    position.

  2.....erase the entire current defined area.

Option 2 moves the cursor to the first position in the current defined area.

<ESC> Ps O

5. INSERT LINE

Inserts one or more erased lines at the current active line.
All subsequent lines are scrolled down Pn line(s).
CURSOR POSITION moves to beginning of the first inserted line.

<ESC> [Pn L

6. DELETE CHARACTER

Deletes the specified number of characters starting at the
current cursor position. The default number is 1 character.
All characters right of the character on the line shift Pn
position(s) left. This command will only operate on the
current line (i.e., character deletion will not cross line
boundaries).
CURSOR POSITION remains unmodified.

<ESC> [Pn P

7. DELETE LINES

   Deletes the specified number of lines starting at the current
   line. All subsequent lines move up Pn line(s) to fill the
   empty positions.
   CURSOR POSITION remains unmodified.

   <ESC> [Pn M

8. REPEAT

   Causes the preceding ASCII character to repeat the specified
   number of times. Used as a fast way of filling the screen or
   a portion of the screen with some special character.

   <ESC> [Pn b

TEXT ATTRIBUTES

This section summarizes the text attributes and describes the
commands for modifying text attributes. These attributes will
remain in effect until a subsequent text attribute command executes.
Attributes can be combined.

1. SELECT GRAPHICS RENDITION

    Sets the graphics attributes of text that is to be displayed
    on the screen. The following are settable attributes along
    with the corresponding selection code for the SGR command:

              ATTRIBUTE   CODE

        Normal rendition.........................0
              normal intensity
              no underscore
              no blink
              no reverse video
              primary character set
        Reduced intensity........................2
        Underscore...............................4
        Blink....................................5
        Reverse video............................7
        Primary character set...................10
        Alternate character set.................11
        Down loadable set.......................12

    <ESC> [Ps ; Ps ;.....Ps m

2. RESET TO POWER UP STATE

    Initializes the terminal as if it had been turned off and
    back on.

    <ESC> c

3. CURSOR TABULATION CONTROL

    Allows the applications programmer to specify tab stops or
    delete tab stops under program control. Three options are
    allowed with this command:

        CODE   ACTION

        0...........Set horizontal tab stop at active position
                    (DEFAULT).
        2...........Clear horizontal tab stop at active position.
        5...........Clear all horizontal tab stops in the device.

    <ESC> [Pn W

SELECT CURSOR RENDITION

The WICAT video terminal supports 4 different kinds of
software-selectable cursors. They are as follows:

    0   NON-BLINKING REVERSE VIDEO BLOCK
    1   BLINKING REVERSE VIDEO BLOCK
    2   NON-BLINKING UNDERLINE
    3   BLINKING UNDERLINE

<ESC> [Pn z

SETTING MODES

Two commands change the mode of the terminal. One puts the terminal
in a set state for the specified mode selections, the other puts the
terminal in a reset state for the selected operands. They are as
follows:

      SET MODE
      Used with one of the codes below, SET MODE sets the associated
      mode.
      <ESC> [Ps h

      RESET MODE
      Used with one of the codes below, RESET MODE resets the associated
      mode.
      <ESC> [Ps l

To set or reset the modes, the ANSI code(s) listed at the end of
each definition replace(s) the parameter(s).

The operands that can be selected are defined below:

1. GUARDED AREA TRANSFER MODE

    GATM specifies whether guarded areas are transmitted to the
    host. In the SET STATE guarded areas are transferred by the
    SEND keys. In the RESET STATE guarded areas are not transferred.

    ANSI CODE = 1

2. KEYBOARD ACTION MODE

    KAM governs the receipt of character input at the keyboard.
    The RESET STATE prohibits input at the keyboard, while the
    SET STATE allows keypad input at the keyboard. This is
    useful when, for example, the user has a long wait for a disc
    action. The programmer can SET the KAM when disc processing
    concludes to continue normal input.

    ANSI CODE = 2

3. CONTROL REPRESENTATION MODE

CRM modifies the terminal's representation of control char-
acters. In the SET STATE control characters have a graphic
representation on the screen as well as perform the requested
action. In the RESET STATE control characters have no graphic
representation.

ANSI CODE = 3

4. INSERT REPLACE MODE

IRM specifies the method for inserting characters on the
screen. In the RESET STATE the characters replace the char-
acter at the active screen position. In the SET STATE the
character is inserted as follows: the character at the active
position and all subsequent characters on the current line
shift right one character and then the character is inserted.
This is the default for many screen-oriented editors.

ANSI CODE = 4

5. ERASE MODE

ERM affects the EDITING commands on pages 6-4 and 6-5 that
handle screen or character erasure. In the RESET STATE the
editing functions will only erase unprotected areas of the
screen. In the SET STATE the erase commands execute regard-
less of the protection set for the specified areas.

ANSI CODE = 6

6. SEND-RECEIVE MODE

SRM allows the user to modify the way the terminal handles
transmission of data. In the RESET STATE all characters
from the keyboard echo on the screen and are sent to the HOST.
In the SET STATE the input at the keyboard is not echoed at
the terminal.

ANSI CODE = 12

7. AREA TRANSFER MODE

    SATM allows the user to use the full screen for transmission
    to the host or an auxiliary device or just the portion defined
    by the SELECTED area(s) as described in the SSA and ESA
    commands. In the RESET STATE only the selected areas are
    transmitted. In the SET STATE the entire screen is transmitted.

    ANSI CODE = 17

8. LINE FEED NEW LINE MODE

    LNM modifies the terminal's interpretation of the <LF> char-
    acter and moves the cursor to the first position of the
    following line. In the RESET STATE the cursor moves down
    one line and remain in the same column.

    ANSI CODE = 21

9. PROTECTED MODE

    PRM only affects the terminal when defined areas have been
    defined and when the terminal is in block mode. If these
    conditions are met the terminal enters protected block mode
    and all defined areas then take effect. In protected block
    mode the cursor may not be positioned in a protected field;
    all scrolling is disabled, and lines cannot be inserted or
    deleted.

    ANSI CODE = <

10. SCREEN ACTION MODE

SAM governs the receipt of information. Use the touch panel
on the screen to allow or disallow receipt. In the RESET
STATE no touch panel interactions are sent to the host. In
the SET STATE touching the screen sends the grid touched to
the host via an encoded escape sequence.

<ESC> [P1 ; Pc r

This is the same escape sequence as the CURSOR QUERY (p. 6-12),
except the last escape character is lower case "r" instead of
upper case "R". Lower-case "r" is needed because the CPR
(CURSOR POSITION READ) command sends a character cell address
to the host. The character cell layout is different from the
TOUCH PANEL grid layout for the screen. Thus the host must
differentiate between the two reports that can be sent.

NOTE- The touch panel may not be the device that generates
       the escape sequence. Use a LIGHT PEN or a TABLET.

ANSI CODE = =

TERMINAL ENQUIRIES

The terminal can receive the following devices and cursor attributes:

1. CURSOR QUERY

    Requests the cursor location. The position is sent back to the host in the following format:

    <ESC> [Pl ; Pc R = response.

    Where Pl is the line number and Pc is the column number.

    <ESC> [6 n = syntax.

2. WHAT ARE YOU

    The host requests the terminal identification from the terminal. The response is in the following format:

    <ESC> [c = syntax.

    <ESC> [7000 c   = response.

3. STATUS REPORT

    Requested by sending the following escape sequence:

    <ESC> [5 n = syntax

    The possible responses are:

    <ESC> [0 n Terminal OK
    <ESC> [3 n Terminal NOGO

FIELD PROTECTION

Defines formatted areas of the screen. For example, input forms, protected or unprotected areas, fields, and types.

1. DEFINE AREA QUALIFICATION

    Use DAQ to define special attributes in various areas of the
    screen and to protect defined areas from all input or class of
    inputs. An area is defined from the cursor position at the
    sending of the DAQ command to the current cursor- 1 of a
    subsequent DAQ command. This escape sequence can be sent to the
    terminal anytime but the defined areas go into effect when the
    terminal is in BLOCK MODE and when PROTECTED MODE has been set.

    <ESC> [Ps o

    Where Ps has the following meaning:

        0.....area is unprotected
        1.....accept no input (protected) and do not transmit
              (guarded)
        3.....accept numeric input
        4.....accept alphabetic input
        5.....accept special characters
        6.....zero fill in area when transmitting
        7.....space fill in area when transmitting
        8.....accept no input (protected) but transmit (not guarded)

    The parameters 0, 1 and 8 are mutually exclusive. If more than
    one appear in the area description then the last one encountered
    executes. Parameters 3, 4 and 5 can be used in any combination
    and are ored together. Parameters 6 and 7 are mutually ex-
    clusive, and only the last one encountered takes effect.

2. CONTOL KEYS

    When defined areas exist in protected block mode:

    <TAB>
      Move to first unprotected position in the next unprotected
      area (wraps from the last area back to the first area).

<BACKTAB>-(PF1)
   If the current position is in the middle of an area, PFI
   moves to the first unprotected position in the current de-
   fined area; otherwise PFI positions to the first unprotected
   position in the prior unprotected area.

<CR>
   Move to first unprotected position in the next or any sub-
   sequent lines; if none exist, then this wraps back to the
   top of the screen and searches until finding the first un-
   protected area.

<LF>
   Moves the cursor down one line. If the new position is pro-
   tected, position to the nearest unprotected area on the line
   by scanning first to the right and then to the left. If no
   unprotected areas exist on the line, the process is repeated
   on subsequent lines, wrapping from bottom to top of screen,
   until an unprotected area is found.

3. CURSOR POSITIONING KEYS

   UP
   Same as <LF> except UP moves the cursor up one line.

   DOWN
   Same as <LF>.

   LEFT
   Positions to the next unprotected character position to the
   left. If you are at the left boundary of an area, LEFT
   positions to the first character position of the preceding
   unprotected area. This wraps from the first position of the
   first defined area to the last position of the last area).

   RIGHT
   Positions to the next unprotected character position to the
   right. If you are at the right boundary of an area, right
   positions to the first position of the next unprotected area.

   DELETE
   Deletes the preceding character, if not on a left boundary,
   of an unprotected area.

   CIRSCRN-(PF2)
   PF2 clears the entire space, which may or may not include pro-
   tected areas depending upon the ERASE MODE described in the
   SETTING MODES section. PF2 also positions the cursor to the
   first unprotected field after the home position.

4. TRANSMIT KEYS

SHIFT SEND=SENDLINE

Sends the unprotected field contents of the current line to the host. Pressing the control key simutaneously sends the entire line with the defined areas delimited by the <ESC> sequences which describe them.

SEND=SENDPAGE

Sends the unprotected field contents of the current page to the host. Pressing the control key simutaneously sends the entire page with the defined areas delimited by the <ESC> sequences that describe them.

NOTE: The send key works the same in unprotected block mode except only defined areas have no effect on what is transmitted.

TERMINAL TRANSMISSION ATTRIBUTES

Controls transmitting and receiving data from the terminal to the computer.

1. ALTERNATE KEY PAD MODE

    When the terminal is not in this mode, the alternate keypad generates an escape sequence as defined in appendix A.

    <ESC> =

2. NUMERIC KEYPAD MODE

    This mode sets the terminal so that the keys in the alternate keypad will generate the normal ASCII code for the respective key when the key is depressed. See appendix A.

    <ESC> >

3. BLOCK MODE/CONVERSATION MODE

    In block mode no codes are transmitted to the host until the terminal receives SEND PAGE or SEND CURRENT LINE.

    In conversation mode all input from keyboard is sent directly to the host. Only characters received from the host are echoed on the screen.

    <ESC> 0 BLOCK MODE

    <ESC> 1 CONVERSATION MODE

4. SEND PAGE

    In block mode all transmission to the host is done with the send key. The send key executes a send page. If selected areas are defined, and the selected area transfer mode (SATM) is reset, then only the selected areas are included in the transfer. If guarded areas have been defined and the terminal is in protected block mode, the guarded areas are excluded from the transmission unless guarded area transfer mode (GATM) is set. In send page all lines are terminated by the ASCII control character <FS> (hex 1C), and the last character sent is followed by <CR>. Any guarded areas skipped are replaced with <US> (hex 1F) and all selected areas, in SATM mode, are terminated with <GS> (hex 1D).

5.   SEND LINE

Typing SHIFT SEND initiates send line. It acts like send page,
except, only the current line is sent. Since only one line is
sent, no <FS> character follows the line.

6.   START OF SELECTED AREA

This command does not begin the transmission of data, it merely
places a marker in the buffer to specify where subsequent block
transmits will begin. The END OF SELECTED AREA command will sig-
nal the end of the area to be transmitted. If there is no ESA
command, then the END of the buffer signals the termination of
the area.

<ESC> F

7.   END OF SELECTED AREA

ESA indicates that the active position is the termination of a
string of character positions to the auxilliary device or the
host.

<ESC> G

8.   MEDIA COPY

Commands the terminal to print the screen (or selected areas only
if SATM is reset), transferring the bytes to the printer port.
The terminal sends an initial <CR><LF> and then sends each line
followed by <CR><LF>.

<ESC> [0 i

CHAPTER 6

THE ELECTRICAL SPECIFICATIONS

ITEM	SPECIFICATION
DISPLAY:	
Screen Size	12"diagonal screen. 8"x6" viewing area.
Format	25 character rows, (row 25 displays either terminal status information or function key mnemonics).
Character Size	10x12 pixel character matrix with a 7x9 character font and 800x300 dots per screen.
Standard Character Set	128 ASCII characters (with 32 control characters) and 96 ASCII characters displayed.
Alternate Character Set	EPROM-programmed for graphic characters and foreign characters. (NON-STANDARD FEATURE).
Refresh Rate	60/50 Hz depending on power line frequency.
Cursor Types	A. blinking underline B. blinking reverse video C. non-blinking underline D. non-blinking reverse video block
Field Attributes	A. blinking characters B. reduced intensity characters C. reverse video characters D. blanked characters E. underlined characters

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Memory:
System ROM...................8K x 16 (8K x 16 expand)
System RAM...................16K x 16
1/0 Address Space...........16K x 8

Text RAM....................4K x 8 : STANDARD
Text RAM....................4K x 8 : OPTIONAL
Character Generator ROM.....2K x 8 : STANDARD
Character Generator ROM.....2K x 8 : OPTIONAL

CRT:
Phospher Type...............P31-green (mediam persistance)
Video Drive
   Level....................(2.5-5.5V white pos.)
   Rise/Fall Times..........(40n Sec. max.)
Horizontal Drive:
   Level....................(2.5-5.5V Sync. Pos.)
   Pulse Width..............(4-40 uSec.)
Vertical Drive
   Level....................(2.5-5.5V Sync. Pos.)
   Pulse Width..............(300-1400 uSec.)
Video Amplifier
   Bandwidth................(18 MHz)
   Gain.....................(18dB)
   Storage Time.............(20 nSec Max.)
Syncronization
   Horizontal...............(19.44 KHz)
   Vertical.................(50-69 Hz)
   Horizontal Retrace Time....(8.9 uSec.)
   Vertical Retrace Time......(640 uSec.)
External Control...........brightness

COMMUNICATIONS:
Serial Port.................EIA RS232C
                           half or full duplex
                           16 Baud rates-50 to 19.2K Asyncronous
                           7 or 8 bit characters
                           1 or 2 stop bits
                           odd, even or no parity
Printer Port...............EIA RS232C
                           same as above except SEND only
```

POWER:
          A.Line Voltage........120/240V
          B.Line Frequency......50/60 HZ
          C.Line Current........0.46/0.23 AMP
          D.Input Power.........55W

DIMENSIONS:
Monitor.....................16"H x 15.5"D x 15"H

KEYBOARD SPECIFICATIONS:
The keyboard is the KEYTRONIC Model L2207.
     General...................keyboard detachable unit with a
                               6ft coiled cord attached.
     Key Layout................83 key arrangement.
     Keyboard Communications....serial TTL
     Keyboard Specifications....full ASCII code, seperate numeric
                               keypad, seperate cursor control keys,
                               auto repeat and function keys defined
                               by host.