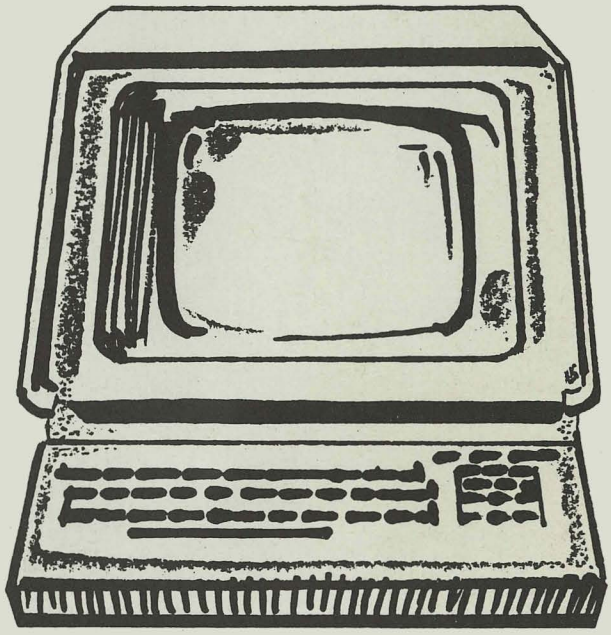
INFOTON 100

USER'S MANUAL



Infoton

INFOTON 100

USER'S MANUAL

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INFOTON

TABLE OF CONTENTS

LIST OF TABLES AND ILLUSTRATIONS

SECTION 1 ARCHITECTURE

1.0 INTRODUCTION

The INFOTON 100 Display Terminal is a durable high-reliability interactive stand-alone I/O terminal that employs a powerful Z80 microprocessor to achieve a new standard of functional capability ("functionality") in low priced terminals.

The Terminal includes a solid-state attached Keyboard with numeric pad, cursor control keys, standard ASCII (7-channel; 8 bits including parity) 128-code character-set with additional control commands, two industry-standard Asynchronous Serial Interfaces, a 12-inch high-resolution low-glare Display Monitor, and rugged steel packaging.

The INFOTON 100 provides a number of formatting and annunciation features, including: dual-intensity (full/half), dual-rendition (normal/reverse image), an additional line-drawing-graphics character-set, line-editing, and absolute-cursor-addressing.

Other INFOTON 100-Series versions include features, such as User-Programmable Function Keys ("Decision Processing"), and/or Block Mode with protected and unprotected fields, which greatly enhance the functionality of the Terminal. An addendum describing Block Mode and Decision Processing appears after Section 5. INFOTON also offers optional emulation packages -- firmware, with associated key cap legends (and in some cases, different special graphics and/or rear panel switches), that allows emulation of other competitive CRT terminal products. In these cases, the rear panel switch settings and the functional responses are different, and the User should therefore refer to the specific version of the "INFOTON 100 User's Manual" for correct information regarding architecture, terminal controls, and terminal programming for the particular Emulator version encountered.

INFOTON representatives or distributors will be pleased to provide more information.

Figure 1-1. INFOTON 100 Display Terminal

IN-3

1.1 START-UP PROCEDURES

The following procedures should be followed prior to placing the Terminal On-Line.

- Turn the POWER Switch to the ON position, and set the LOCAL Key for local operation. A 30-second warm-up period is required, after which the blinking cursor will appear on the screen with a displayed question mark (?) if there is no device connected to the EIA Port, following a short "beep".

- Set rear panel switches for the desired mode of operation (see Topic 4.2). Set CAPS ONLY and other control keys for desired operation.

NOTE

Place the unit "off-line" before changing any rear panel switches, as the DIP switches are only read by the microprocessor upon the On-Line transition, or Power-On.

- Adjust INTENSITY Control as required. The control knob is located on the rear panel (see Figure 4-4).

- Type a message to see that it is correctly written on the screen. Exercise functional keys (i.e., RETURN, LINE FEED, TAB, etc.) to ensure proper operation.

- Depress the LOCAL Key for On-Line operation.

SECTION 2 SPECIFICATIONS/CHARACTERISTICS

The following paragraphs summarize the basic features of the INFOTON 100 Display Terminal.

2.1 TERMINAL COMPONENTS

2.1.1 Keyboard

The INFOTON 100 display terminal Keyboard is permanently attached to the Terminal. The Keyboard uses solid state capacitively coupled keys for high reliability and long life.

The standard Keyboard consists of three key groupings: a 57-key alphanumeric pad, a 14-key FUNCTION-shifted numeric pad and a 5-key cursor and mode control pad. The Keyboard is illustrated in Figure 4-1.

Depressing a key on the Keyboard will cause a code to be sent out on the Communication Interface if the Terminal is on line. The "Typematic" feature allows holding a repeatable key down to cause the key code to be repetitively sent out at the speed of the interface, or 15 characters per second, whichever is slower.

2.1.2 Video Monitor

The video Display used in the INFOTON 100 is a high quality, high resolution, 12-inch Cathode Ray Tube (CRT) which uses P4 white phosphor and a non-interlaced raster-scanning method to provide clear and accurate character reproduction with low glare. Characters are produced using a 7 x 9 dot matrix for upper case characters and a 9 x 9 dot matrix for lower case.

Optional scratch resistant filters, that simulate green or yellow-brown phosphor, are available.

The Display has a screen capacity of 1920 characters, organized in 24 lines of 80 characters each. An additional 25th line is used for the display of terminal status information. Status is displayed manually, upon request from the Keyboard; and automatically upon change, unless disabled by a rear panel switch.

The INFOTON 100 has four standard display modes:

- normal video -- light characters on a dark background at normal intensity.
- normal video, reduced intensity -- light characters on a dark background at reduced intensity.
- reverse video, normal intensity -- dark characters on a light background at normal intensity.
- reverse video, reduced intensity -- dark characters on a light background at reduced intensity.

2.1.2 Video Monitor (continued)

Whether normal or reverse video is selected for display of characters, the dual intensity modes are selectable on a character by character basis and do not require a character position to effect the change.

2.1.3 Communications Interface

The INFOTON 100 provides two separate industry standard interfaces to allow simple connection to a variety of equipment. The terminal has a standard 20-milliampere passive current-loop interface (with current supplied by the host equipment) that allows simple direct-connection to most equipment.

The Terminal also has a second serial interface, which complies with EIA RS-232C and CCITT V24 specifications. This interface provides all required control and sequencing signals for connection to local equipment or to remote equipment through a modem.

The two interfaces are switch-selectable from the rear panel.

The INFOTON 100 also allows the selection of eight data rates and four parity options through switch settings on the rear panel. Possible data rates include: 110, 200, 300, 1200, 2400, 4800, 9600 and 19200 bits per second. Parity choices include mark or space parity, and odd or even parity.

The INFOTON 100 has an internal 256-character receive buffer which normally eliminates the need for padding characters at high speeds. If problems are encountered in a particular application, NULL codes may be inserted for padding anywhere in a 256-character stream, since the average character-time for characters entering and leaving the buffer will be optimized by the padding. In most cases, no padding will be required at speeds of 9600 baud or less.

The Terminal may be configured to run in Full Duplex Mode or Half Duplex Mode. In Half Duplex Mode, the User may select one of four line turn-around codes.

In addition to the primary Communications Interface, which uses a standard 25-pin EIA connector, the INFOTON 100 provides a transmit-only Auxiliary Interface to allow attachment of a serial hard-copy Printer.

2.2 PHYSICAL CHARACTERISTICS

The INFOTON 100 is packaged in a rugged steel enclosure which gives the terminal increased EMI and RFI shielding. Physical characteristics of the terminal are as follows:

PHYSICAL		ENVIRONMENTAL	
Height	14-1/8 inches	Operating Temperature:	5 to 40°C
Width	17-1/2 inches	Storage Temperature:	-30 to 65°C
Depth	22-1/2 inches	Relative Humidity:	5 to 80%, non-condensing
Weight	45 pounds		

TABLE 2-1. EIA RS-232C/CCITT V/24 SIGNAL DEFINITIONS AND CONNECTOR PINS

EIA RS-232C Name	CCITT V24 Name	Description	Printer Interface J6 Pin No.	Data Line Interface J3 Pin No.	Comments
CD	108.2	Data terminal ready signal from terminal DTR	-	20	Goes high (+12V) when terminal is on LINE; Goes low -12V in Local Mode. Always high on Block/Funct. versions.
CA	105	Request to send signal from terminal RTS	-	4	Goes high (+12V) when the terminal is ready to transmit.
BA	103	Data transmitted from terminal TD	-	2	Logical "1" = OFF = -12V Logical "0" = ON = +12V 300-ohm source impedance
CB	106	Clear to send signal to terminal CTS	-	5	Must be high to allow terminal to send; is supplied by a modem.
CF	109	Carrier present signal to terminal CD	-	8	Must be high to allow terminal to receive; is supplied by a modem.
CC	107	Data set ready to terminal DSR	-	6	Must be high to allow terminal to operate; is supplied by a modem.
BB	104	Data Received by terminal RD	-	3	Logical "1" = OFF = -5V to -25V; Logical "0" = ON = +5V to +25V; 6.8K-ohm load impedance.
AB	102	Signal ground SG	7	7	
CD	108.2	Data terminal ready DTR	20	-	These signals are connected to the printer's data terminal ready signal.
CF	109	Carrier present CD	8	-	
CC	107	Data set ready DSR	6	-	
CB	106	Clear to send CTS	5	-	
BB	104	Data to Printer from Term. (Pr. RD) TD	3	-	Optional print data
Note *Signals "to" Terminal have 4.7K "pull-up" to +5V.*				CURRENT LOOP J3 Pins 21 XMIT(+) 25 XMIT(-) 18 RCVE(+) 19 RCVE(-)	Full 20 milliamperes of loop-current must be supplied by host equipment.

2.3 ENGINEERING HIGHLIGHTS

The INFOTON 100 provides the following advances in terminal technology:

- Z80 microprocessor control;
- 4 K-bytes of dynamic RAM memory;
- Extensive use of large scale integration for video control;
- Direct microprocessor control of keyboard scanning for versatility, lower cost, and higher reliability;
- Steel packaging for ruggedness, noise immunity, increased EMI and RFI shielding, and heat dissipation;
- Vertically mounted, single PC-board design for integral mounting with TV chassis and improved cooling; and
- Convection cooled, no-fan design for improved reliability and silent operation.

SECTION 3 FEATURES

The INFOTON 100 has a number of features which assist in editing text, formatting the display, controlling cursor movement, and performing certain special functions. This section gives a brief summary of these features. A more detailed description of features may be found in Sections 4 and 5.

3.1 EDITING FEATURES

The INFOTON 100 will decode and respond to command codes which allow the user to:

- insert a line of text,
- delete a line of text,
- erase foreground text from the current position of the cursor to the end of a line,
- erase foreground text from the current position of the cursor to the end of the display, and
- provide for non-destructive space advance between receipt of a carriage return and a line feed.

3.2 FORMATTING AIDS

The INFOTON 100 provides the following functions to aid in formatting and annunciation of the displayed area.

- Set columnar tab stops.
- Clear columnar tab stops.
- Tab (forward and back).
- Display data in normal intensity or reduced intensity.
- Display data in reverse video.
- Graphic Mode which allows the display of graphic characters.

3.3 CURSOR CONTROL

The INFOTON 100 provides a full compliment of commands and switch options to control and modify the cursor movement. The following list summarizes the cursor control.

- Cursor Home command.
- Cursor commands for movement upward, downward, left and right.
- Absolute cursor addressing.
- Switch selectable options to automatically advance the cursor at the end of a line (ANL feature) and advance to the next line automatically when a carriage return is keyed by the User (CRNL feature).
- Cursor address read.

3.4 SPECIAL FEATURES

The INFOTON 100 also provides the following special features.

- An audible alarm activated under program control.
- Commands to lock and unlock the keyboard.
- Commands to enable and disable the Printer Interface.
- Command to enable local printing of screen contents.

3.5 DATA ENTRY MODES

All actions, which could occur on the 24th line and that would tend to move the Cursor down, may be considered as data-entry action, including the actual entry of characters.

In both entry modes, the cursor home position is the top left corner of the display and data is entered a line at a time, from the top to the bottom display line. The results of further entry vary with these modes:

- Page Mode

  In Page Mode, entry of data beyond the bottom line causes the Cursor to wrap around to the top line of the display. The display will not scroll under any circumstances.

- Roll Mode

  In Roll Mode, entry of data beyond the bottom line causes the display to scroll upward as additional lines of data are entered.

3.6 OPTIONAL FEATURES

The INFOTON 100 has optional features which considerably extend its functionality.

3.6.1 Display Monitor

For applications that require remote display of data, the INFOTON 100 may have a standard RS-170A, composite-video output jack, installed on the rear panel.

3.6.2 Emulations

Emulations of other competitive CRT displays are implemented by changing the keyboard layout, and the firmware and character-generator PROMs. Differences in layout and functionality are covered in separate versions of the "INFOTON 100 User's Manual".

3.6.3 Copy Code Option

The codes to enable and disable the Printer can be defined to be ESC 5, and ESC 6. This option is usually installed if the Host CPU interprets ASCII DC1 as X-ON, and DC3 as X-OFF.

SECTION 4 TERMINAL CONTROLS

This section contains information concerning the meaning and use of the various controls and options available on the INFOTON 100.

4.1 KEYBOARD CONTROLS

From the Keyboard, the User can control a variety of terminal operations, including the display and setting of terminal status, tab control, cursor control, iniation of multicode sequences, and control of the local copy or print functions.

Figure 4-1 shows the INFOTON 100 Keyboard with four different sections or sets of keys. The main section contains 57 alphanumeric and control keys; to th right, the numeric and function key pad contains 14 keys; above the numeric keypad is a row of 5 mode and cursor control keys; and in the upper left hand corner, a row of 8 special function keys is optionally available.

4.1.1 Main Keyboard Controls

There are eight keys on the main Keyboard which either send control codes directly or modify the code sent by depressing the other alphanumeric keys.

Depressing the ESC Key located to the left of the main Keyboard, causes the Terminal to send the ESCape code (1B 16) providing the Terminal is on-line. This code is used in the INFOTON 100 to initiate multicode control sequences. For example, ESC M will delete a line. See Section 5 for a detailed description of these sequences.

The CTRL (control) Key located to the left of the main Keyboard, does not produce a code by itself. This key is used in conjunction with other keys on the Keyboard to generate control codes. If the CTRL Key is depressed in conjunction with any key that transmits a code, that command (as described in Section 5) is transmitted to the Host Computer. For example, Control L clears the screen.

The SHIFT Key causes the Terminal to send only upper case alphabetic characters or the characters whose symbols appear in the upper portion of the key being depressed. For operator convenience, two SHIFT Keys are on the Keyboard. Each of these keys has the same effect on the data.

Depressing the FUNCTION Key modifies the use of the numeric pad. See Section 4.1.2. FUNCTION Key, as well as SHIFT Key, accesses CAPS ONLY BREAK, STATUS, LOCAL and BKTAB functions.

The RETURN Key causes the Terminal to send a Carriage Return control code (OD 16) and return the cursor to the first position of the present line. See Section 4.2, Switch S2-2, for cursor operation.

Depressing the LINE FEED Key will cause the Terminal to send a Line Feed control code (OA 16) and move the cursor down one line from its current position. See Topic 5.3.2 for LINE FEED operation.

STANDARD
model 100 (U.S. version)

LEGEND

IL 7 - Insert Line.

DC 4 - Delete Character.

EL 1 - Clear foreground to end of line.

CPY , - Printer Copy Mode ON/OFF (alternate action).

IC 8 - Insert Character.

ST 5 - Set Columnar Tab-Stop.

EF 2 - Erase Field.

DL 9 - Delete Line.

CT 6 - Clear Columnar Tab-Stop.

EP 3 - Clear foreground to end of page.

PRT . - Printer Page Mode (Print Page function).

Figure 4-1. INFOTON 100 Keyboard

4.1.1 Main Keyboard Controls (continued)

The TAB/BACK TAB Key has two dual functions. Depressed by itself, it causes the Terminal to send a Horizontal Tab control code (09 16). If the TAB Key is depressed along with the SHIFT Key or FUNCTION Key, the Terminal performs Back Tab. See Topic 5.3.2 for TAB/BACK TAB operation.

4.1.2 Numeric Pad Function Controls

Depressing the FUNCTION key on the main keyboard and one key on the numeric pad modifies the code sent by the Terminal from a numeric 1 thru 9, comma or period ("1" — "9", "," or "."), to the "function" control code for the function shown on the upper part of the key. These function codes are summarized in Figure 4-1 and described in detail in Section 5.

There are two exceptions to the above description of function codes. The CPY (function) key will send a control code which is determined by the current state of the respective feature. Successive depressions of this key will alternately enable and disable the function and send a corresponding control code.

The PRT (function) Key causes no code to be sent by the Terminal. Instead, the key causes the entire contents of the display to be sent to the Auxiliary Interface for local printing.

The ENTER Key will cause the Terminal to send a CARRIAGE RETURN code in Character Mode.

The " - " Key on the numeric pad causes the same action as its counterpart on the main Keyboard.

4.1.3 Mode and Cursor Control

The mode and cursor control key pad located in the upper right section of the keyboard is composed of a five-key unit (Figure 4-1). The basic five-key unit contains the following functions: CAPS ONLY/CURSOR LEFT, BREAK/CURSOR RIGHT, BLOCK/HOME, STATUS/CURSOR DOWN and LOCAL/CURSOR UP and BKTAB.

The cursor movement commands occur with the unshifted operation of these keys. The cursor movement functions are described in Topic 5.3.2.

These keys, except Block, when used with FUNCTION or SHIFT Keys, operate as the terminal control functions described below.

The LOCAL Key controls whether or not the Terminal appears On-Line and ready to receive and send data. When the terminal is powered on, it will be in the On-Line condition. On the EIA interface, the data terminal can send and receive data. When the LOCAL Switch is depressed, with the FUNCTION Key or a SHIFT Key, the Terminal drops the DTR signal and becomes Off-Line. In this condition, data entered at the Keyboard is not sent but is echoed back to the Display automatically.

INFOTON

STATUS LINE MESSAGES

LINE	Terminal is On-Line
LOCAL	Terminal is Off-Line
CAPS	Caps Only (Shift Lock) Mode
COPY	Printer Interface is ON
DSR	Data Set Ready
CD	Carrier Detect
CTS	Clear to Send
PAGE	Page Mode
ROLL	Roll Mode
NOVID	Received Data is not displayed on the CRT
PRINT	Terminal is busy printing contents of Screen
KEYLK	Keyboard is locked

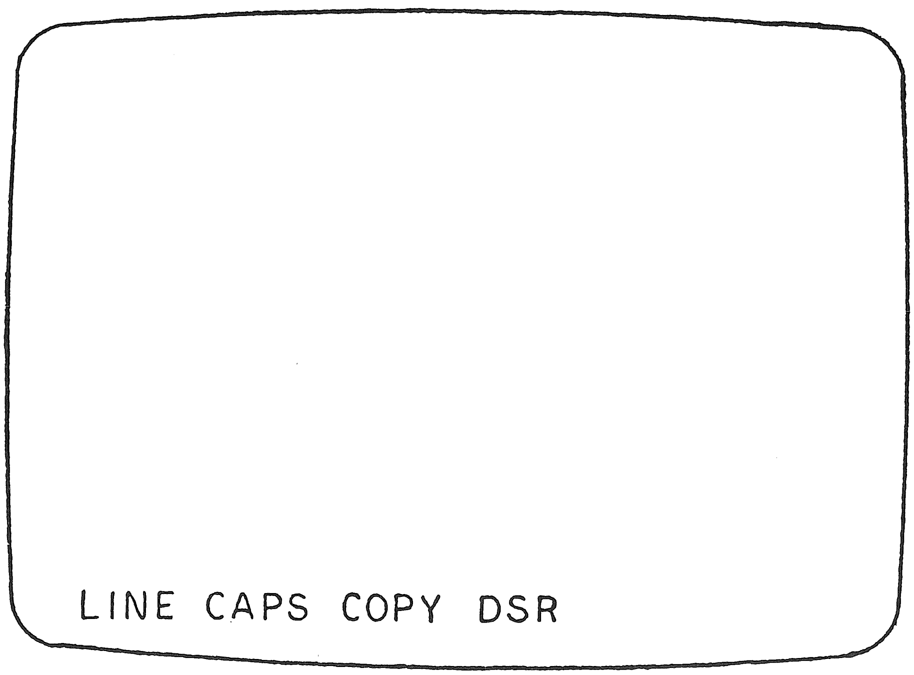


Figure 4-2. Status Line Example

4.1.3 Mode and Cursor Control (continued)

The STATUS Key with the FUNCTION Key or a SHIFT Key causes the status of the Terminal to be displayed on the 25th line for several seconds. Normally, the status line is "blank" and only displays automatically upon a status change when S3-7 is OFF. Figure 4-3 shows a template of the status line. If a mode or signal is active, it will be displayed on this line.

The BLOCK/HOME Key functions only as HOME Key on this version.

Normally after Power-ON, the Terminal will send only upper-case alphabetic characters in Caps Only Mode, until the CAPS ONLY Key is depressed with the FUNCTION Key or a SHIFT Key; then the Terminal will send both upper- and lower-case alphabetic characters.

Depressing the BREAK Key with FUNCTION Key or a SHIFT Key causes the Terminal to interrupt transmission by holding the Transmit Data line (circuit BA for EIA interface) in the space or high condition for 250 milliseconds after the key is released. The BREAK Key, while depressed, also raises the RTS line at the EIA Interface.

4.2 REAR PANEL CONTROLS

Figure 4-4 shows the controls found on the rear panel of the INFOTON 100 Display Terminal. The Terminal is provided with 16 miniature switches, two 25-pin EIA connectors, an optional remote-video jack, circuit breaker, and POWER Switch. Figure 4-3 shows an enlargement of the 16 miniature switches which are organized in two sets of eight switches.

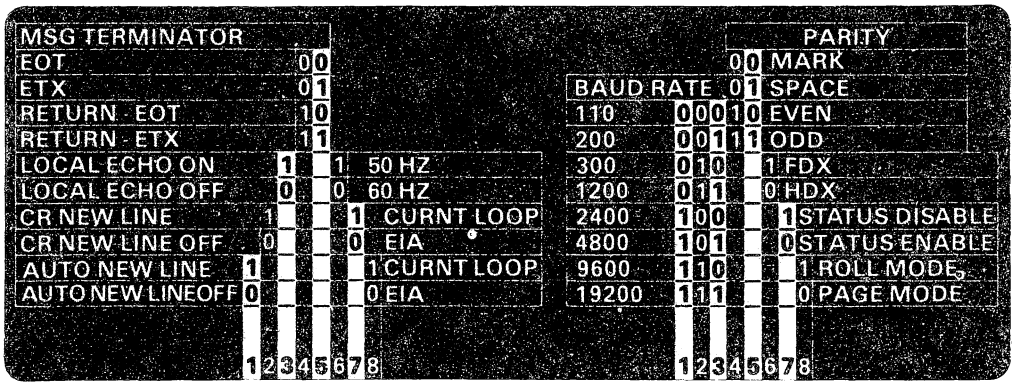


Figure 4-3. Rear Panel Switch Template

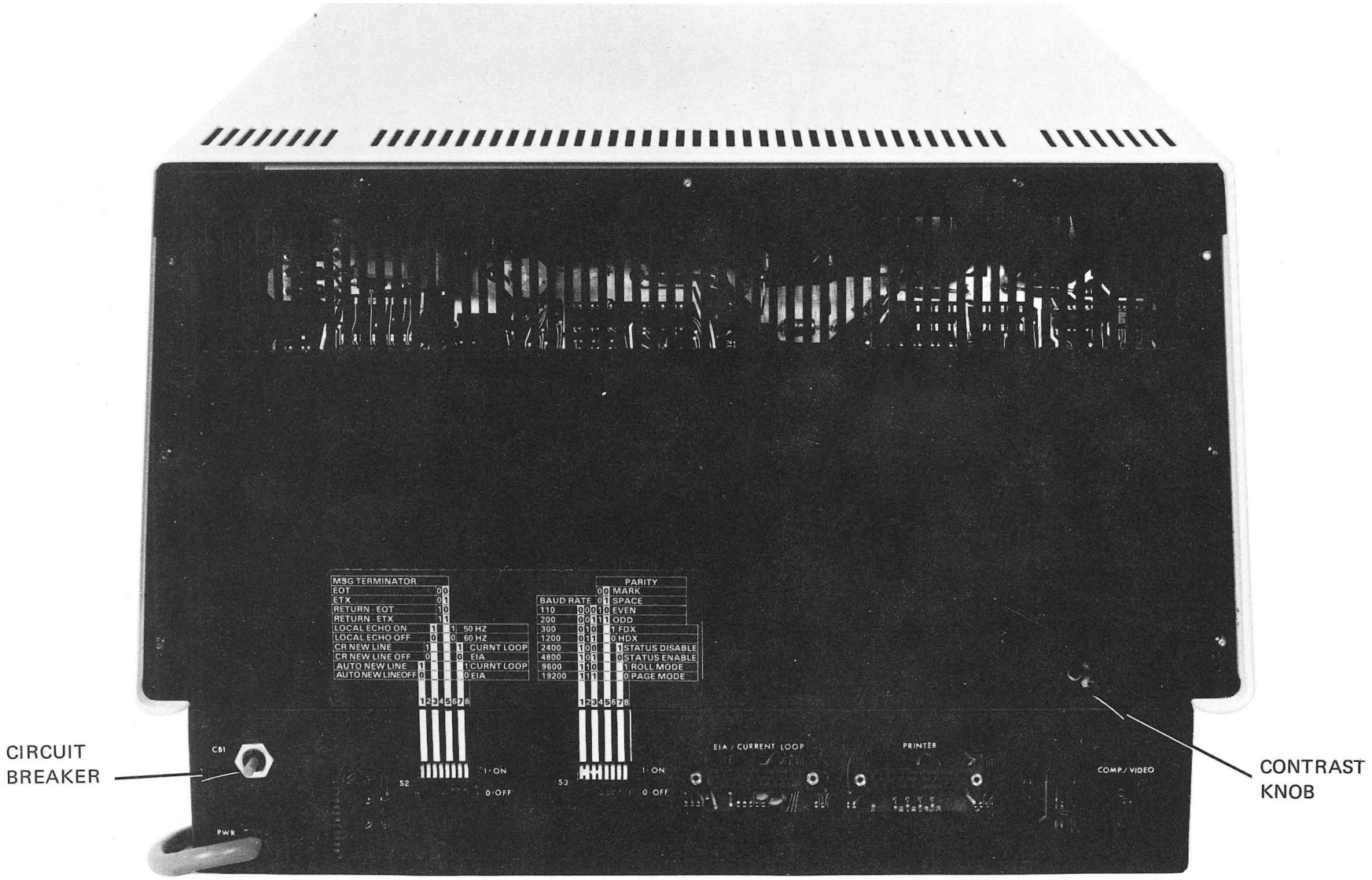


Figure 4-4. INFOTON 100 Rear Panel Controls

4.2 REAR PANEL CONTROLS (continued)

The first set of switches, numbered S2-1 through S2-8, is located to the left of the second set, numbered S3-1 through S3-8, when viewed from the back of the Terminal. The switches are numbered from left to right. The following paragraphs will discuss the function of each switch.

Switch S2-1 - Auto New Line (ANL)

When this switch is in the ON position, the cursor will automatically advance to the first column of the next line when a character is entered in column 80 of the present line. In the OFF position, the cursor will remain in the 80th column and any successive characters entered will overlay the last character on the line until a Carriage Return control code is received by the Terminal.

Switch S2-2 - Carriage Return New Line (CRNL)

When this switch is in the OFF position and the User depresses the RETURN Key on the Keyboard, the cursor will return to the first position of the present line. In the ON position, the cursor will automatically advance to the first position of the next line when the user depresses the RETURN Key. However, only the CR code will be transmitted.

Switch S2-3 - Local Echo

This switch (labeled LOCAL ECHO) determines whether or not data keyed on the Keyboard is echoed and displayed locally when operating in Full-Duplex environment. In Half-Duplex Mode this switch should be set to the OFF position.

Switches S2-4 and S2-5 - Line Turn-Around

These two switches define the character code selected for line turn-around when operating in Half-Duplex Mode. In Full-Duplex Mode, the switch settings are ignored. The line turn-around codes are defined in the following table.

Switch S2-4	Switch S2-5	HDX Line-Turnaround Code
Off	Off	EOT
Off	On	ETX
On	Off	CR - EOT *
On	On	CR - ETX *

*EOT or ETX will be automatically transmitted following a CR (Carriage Return) code from the Keyboard. A CR code from the Host Computer will not automatically transmit the EOT or ETX. The EOT or ETX code must be generated by the Host to turn the line around.

4.2 REAR PANEL CONTROLS (continued)

Switch S2-6 - 50/60 Cycle Power

This switch is set to indicate whether the Terminal is to operate with 50 or 60 Hz power-line frequency. In the ON position, 50 Hz is selected. In the OFF position, 60 Hz is selected. Note that the Terminal must be equipped with the proper transformer for the line-frequency actually encountered.

Switches S2-7 and S2-8 - Interface Selection

These two switches determine whether or not the Communications Interface operates in RS232-C Mode or in 20-Milliampere Current Loop Mode. Loop current is supplied by the host equipment. In the OFF position, the EIA RS232-C interface is enabled. In the ON position, the 20-milliampere Send- and Receive-Data signals are applied to pins 21/25 and pins 18/19 of the 25-pin primary connector, respectively.

Pin No.	Function	
21	OUT +	TRANSMIT
25	OUT -	
18	IN +	RECEIVE
19	IN -	

NOTE

Rear panel switches must be set, and full 20-milliamperes of loop-current must be supplied by the host equipment.

The second set of 8 switches is located to the right of the first. These switches are numbered S3-1 through S3-8 starting from the leftmost switch.

Switches S3-1, S3-2, and S3-3 - Data Rate Selection

SWITCHES			BAUD	# STOP BITS
S3-1	S3-2	S3-3		
OFF	OFF	OFF	110	2
OFF	OFF	ON	200	1
OFF	ON	OFF	300	1
OFF	ON	ON	1200	1
ON	OFF	OFF	2400	1
ON	OFF	ON	4800	1
ON	ON	OFF	9600	1
ON	ON	ON	19200	1

4.2 REAR PANEL CONTROLS (continued)

Switches S3-4 and S3-5 - Parity Selection

These switches determine how the parity bit will be set in each character according to the following table:

TRANSMIT/RECEIVE CHARACTER PARITY MODES

S3-4	S3-5	Receive Checks	Transmit Generates	When
OFF	OFF	NO	MARK	Always.
OFF	ON	NO	SPACE	Always.
ON	OFF	EVEN	EVEN	As needed for EVEN total bits.
ON	ON	ODD	ODD	As needed for ODD total bits.

Switch S3-6 - Half/Full Duplex Indicator

This switch determines what type of line-control will be used to send and receive data. In the OFF position, the Terminal will operate in Half Duplex Mode. In this mode, data may only be sent or received until a turn-around character is detected. At this time, the direction of data flow is reversed. The Terminal will automatically echo data sent in this mode. When first powered on, the Terminal will remain in the Receive Mode until a key is depressed on the Keyboard.

When switch S3-6 is in the ON position, the Terminal operates is Full Duplex Mode, and data may be sent and received at the same time. The Terminal will permanently raise the Request to Send (RTS) signal on the EIA interface.

NOTE

When operating in Full Duplex Mode the transmitted data will not be displayed on the screen unless "echoed" back by the Host Computer or the Modem or unless S2-3 (Local Echo) is enabled.

Switch S3-7 - Status Line Disable

This switch determines whether or not the status line will be displayed automatically upon any changes to the status of the terminal (i.e., Local/On-Line, Caps/No Caps). Regardless of the switch setting, the status line can be displayed by depressing the FUNCTION or a SHIFT Key and STATUS Key.

Switch S3-7	Meaning
OFF	Status Enabled
ON	Status Disabled

4.2 REAR PANEL CONTROLS (continued)

Switch S3-8 - Roll/Page

The Cursor home position is the upper left corner of the screen, column 1, line 1. In either entry mode, successive lines of data are entered and displayed below the previous lines until the bottom of the Display is reached.

When S3-8 is OFF the Display is set to Page Mode, and any entry after the bottom line has been filled "wraps-around" so that data then enters at the top of the page.

When S3-8 is ON the Display is in Roll Mode, and any entry after the bottom line has been filled, scrolls the Display upward with the top line then lost.

NOTE

Check that switch banks at M2 and M4 are properly seated in their sockets.

NOTE

Whenever any miniature (DIP) switch is changed, toggle the Terminal to LOCAL, then ON-LINE -- the DIP switches are read by the microprocessor ONLY on the transition to On-Line Mode, or Power-ON.

SECTION 5 TERMINAL PROGRAMMING

This section describes how the INFOTON 100 responds to control codes received over the Communications Interface. Control codes may be generated directly by the Host Computer that controls the Terminal; or they may be "echoed" back to the Terminal from the Keyboard, via the Host. It is important to note that in On-Line Mode, no control code entered from the terminal Keyboard can have any local effect, unless it is echoed back by the Host CPU to the Terminal, which only interprets (for execution) those codes it *receives*.

Control codes which the INFOTON 100 responds to are described in logical groups:

- Format and Mode Control;
- Editing:
    - Cursor Motion,
    - Cursor Addressing, and
    - Deletion, Erasure, and Insertion;
- Input/Output Control;
- Status Reporting, and
- Special Controls.

5.1 CONVENTIONS

When reading the following descriptions, these conventions should be noted:

- Upon Power-On the Keyboard is unlocked, and the CRT displays high-intensity data with normal (light on dark) rendition.
- "Foreground" data refers to data displayed at high (full) intensity and "background" data refers to data shown at low (half) intensity.
- Control codes, except erase instructions or in cases where the top line is scrolled away in Roll Mode, do not destroy display-memory content. Control codes are not displayable, except in their effect on cursor placement.
- All functions may be performed remotely On-Line, or from the Keyboard only in Local Mode, except ESC *l* which is remote-only for Keyboard Unlock, and ESC r, Read Cursor Address (RCA).
- The Terminal transmits onto the data-line all of the controls, sequences, or strings, that are received from the Keyboard On-Line, and any response, report, or status strings that are generated because of codes received.

5.1 CONVENTIONS (continued)

- The following sequences do NOT contain Space codes; but spaces are inserted into the descriptions for clarity, as are: o, octal; and h, hexadecimal.

- Characters and commands are actually transmitted or received in octal (ASCII); but these can be referenced most easily by seven-bit codes, expressed in hexadecimal notation, without regard to the mode-dependent (parity) bit 8 (2^7). The upper and lower hex characters represent column and row, respectively, in Tables 5-1 and 5-2.

TABLE 5-1. ASCII CODE SET, DISPLAY CHARACTER SET, AND CURSOR POSITIONING CHART

b_7 b_6 b_5 → / Bits b_4 b_3 b_2 b_1 ↓ / COLUMN / ROW	0_0	0_1	1_0	1_1	2_0	2_1	3_0	3_1
	0	1	2	3	4	5	6	7
0 0 0 0 0	NUL	DLE	SP 1	0 17	@ 33	P 49	` 65	p 81*
0 0 0 1 1	SOH	DC1	! 2	1 18	A 34	Q 50	a 66	q
0 0 1 0 2	STX	DC2	" 3	2 19	B 35	R 51	b 67	r
0 0 1 1 3	ETX	DC3	# 4	3 20	C 36	S 52	c 68	s
0 1 0 0 4	EOT	DC4	$ 5	4 21	D 37	T 53	d 69	t
0 1 0 1 5	ENQ	NAK	% 6	5 22	E 38	U 54	e 70	u
0 1 1 0 6	ACK	SYN	& 7	6 23	F 39	V 55	f 71	v
0 1 1 1 7	BEL	ETB	' 8	7 24	G 40	W 56	g 72	w
1 0 0 0 8	BS	CAN	(9	8 25	H 41	X 57	h 73	x
1 0 0 1 9	HT	EM	) 10	9 26	I 42	Y 58	i 74	y
1 0 1 0 A	LF	SUB	* 11	: 27	J 43	Z 59	j 75	z
1 0 1 1 B	VT	ESC	+ 12	; 28	K 44	[60	k 76	{
1 1 0 0 C	FF	FS	, 13	< 29	L 45	\ 61	l 77	|
1 1 0 1 D	CR	GS	- 14	= 30	M 46	] 62	m 78	}
1 1 1 0 E	SO	RS	. 15	> 31	N 47	^ 63	n 79	~
1 1 1 1 F	SI	US	/ 16	? 32	O 48	⌙ 64	o 80	DEL

The characters directly under hex-columns 2 through 6 are the set of displayable characters.

* In columns 2 through 7, the numbers at the lower right are column X and Line Y parameters for HVP response (Topic 5.3.6) to RCA, and for SCA (Topic 5.3.3). It is not possible to position the Cursor to column 81 with Select Cursor Address.

^ Prints as arrow up ↑ on some Printers.

⌙ Prints as underline "_" on some Printers, and arrow left ← on others.

5.2 CONTROL CODE FORMAT

Generally a control in Table 5-2 is made: 1) directly from a function or cursor-motion key, 2) from a combination of an alphanumeric or symbol key with CTRL Key that forms an ASCII control code, or 3) as a two-code sequence: the ESCape Sequence Introducer (octal 33, hex 1B) as a lead-in code, followed by a function-code character (F).

TABLE 5-2. ASCII CODE SET AND COMMAND SUMMARY

ASCII 4-3,2,1	7-6,5 HEX U L	0 00	0 01	0 10	0 11	1 00	1 01	1 10	1 11
		0	1	2	3	4	5	6	7
0 000	0	NULL @	DLE P	SPACE	0	@	P	`	p
0 001	1	SOH A	DC1 Q FCN FCM (2)	!	FST SCT 1	CUU1 A ↑	Q	SNV a	q
0 010	2	STX B	DC2 R	"	FCT CCT 2	CUD1 B ↓	R	SRV b	RCA r
0 011	3	ETX C	DC3 S FCF (2)	#	SHI 3	CUF1 C →	S	c	s
0 100	4	EOT D	DC4 T	$	SLI 4	CUB1 D ←	T	d	t
0 101	5	ENQ E	NAK U	%	FCN PCM 5 (2)	E	U	e	u
0 110	6	ACK F	SYN V	&	FCF 6 (2)	F	V	SCA HVP f (1)	v
0 111	7	BELL G	ETB W	'	7	G	W	CAT g	w
1 000	8	BSP H SH/DEL	CAN X	(	8	CUH HOME H	X	KLK SM h	x
1 001	9	HT I TAB	EM Y	)	9	I	RNS Y	i	y
1 010	A	LF J LINE FEED	SUB Z	*	:	FEP EOP J	SNS Z LF=DS CR=NDS	j	FBT SBT z BACK TAB
1 011	B	VT K	ESC [	+	;	FEL EOL K	[	k	{
1 100	C	FF L ERAS SCRN	FS \	,	<	FIL IL L	\	KUL RM l	|
1 101	D	CR M CARR RET	GS]	-	=	FDL DL M	]	m	}
1 110	E	SO N SGM	RS ^	.	>	ECF N ECHO OFF	^	ECN n ECHO ON	~
1 111	F	SI O SNM	US _	/	?	FPP PPM O	_	o	DEL RUB OUT

The area enclosed by heavy lines will display as upper case characters when lower case is disabled. Hex columns 0 and 1 are Control Codes; hex column 3 is the parameter list; and hex columns 3 through 7 are two-code sequences that use the ESC lead-in code. Parity bit is not shown. INFOTON 100, and ASCII, Controls are both given where they exist. Displayed characters in columns 2 through 7 are generally ANSI (printer) compatible. The double-lined area occurs only in Caps-Only Mode.

NOTE

(1) *HVP is the response to RCA command, or is the request SCA command.*
(2) *With Copy Code Option ESC 5 and ESC 6 are used for Printer ON and Printer Off respectively.*
■ *Indicates Controls that are directly producable from the Keyboard.*

5.2 CONTROL CODE FORMAT (continued)

The method (and any alternatives) of creating commands from the Terminal is given above each command description, and implies the use of certain upper- or lower-case characters, by illustration.

5.3 COMMANDS AND RESPONSES

5.3.1 Formats and Display Modes

The following control code sequences provide for the format and rendition of data.

SGM Set Graphics Mode (N; SO; o16; h0E) CTRL, with N

Receipt of this control code enables Graphic Mode, causing the Terminal to interpret ASCII character codes as line-drawing graphic characters. Table 5-3 shows 32 graphic characters which correspond to 96 of the 128 defined ASCII codes. When these display characters are created via the Keyboard in Graphic Mode and On-Line Mode, the normal ASCII codes are sent on the data line. Do not attempt to use the ASCII control codes for graphics.

SNM Set Normal Mode (O; SI; o17; h0F) CTRL, with O

Disables Graphic Mode, causing any codes that follow to be interpreted as normal ASCII characters. In this mode, control codes are not displayed.

FST Set Columnar Tab-Stop (ESC 1; o33 o61; h1B h31) FUNCTION, with ST
SCT

Receipt of this code sequence causes the current column location of the Cursor to be marked as a Tab Stop.

FCT Clear Columnar Tab-Stop (ESC 2; o33 o62; h1B h32) FUNCTION, with CT
CCT

If a Tab Stop has been marked in the current column location, it is cleared.

SHI Set High Intensity (foreground) (ESC 3; o33 o63; h1B h33) ESC, then 3

Causes succeeding characters to be displayed at full intensity. This is the default display mode initialized upon Power-On.

SLI Set Low Intensity (background) (ESC 4; o33 o64; h1B h34) ESC, then 4

Causes succeeding characters to be displayed at low intensity.

SNV Set Normal Video (ESC a; o33 o141; h1B h61) ESC, then a

Places the entire display in Normal Video Mode with characters formed by light dots on a dark background.

SRV Set Reverse Video (ESC b; o33 o142; h1B h62) ESC, then b

Places the entire display in Reverse (inverse) Video Mode with characters formed by dark dots on a light background.

CAT Clear ALL (columnar) Tab-Stops (ESC g; o33 o147; h1B h67) ESC, then g

Clears ALL previously-set columnar tabs.

TABLE 5-3. INFOTON 100 LINE-DRAWING GRAPHICS SET

OCTAL	HEX	ASCII CHARACTER			GRAPHIC CHARACTER
00	00	SP	@	`	─
01	01	!	A	a	│
02	02	"	B	b	┼
03	03	#	C	c	┴
04	04	$	D	d	┬
05	05	%	E	e	└
06	06	&	F	f	┌
07	07	'	G	g	┐
10	08	(	H	h	┘
11	09	)	I	i	├
12	0A	*	J	j	┤
13	0B	+	K	k	═
14	0C	,	L	l	¥
15	0D	-	M	m	╪
16	0E	.	N	n	╧
17	0F	/	O	o	╤
20	10	ø	P	p	╘
21	11	1	Q	q	╒
22	12	2	R	r	╕
23	13	3	S	s	╛
24	14	4	T	t	╞
25	15	5	U	u	╡
26	16	6	V	v	Ç
27	17	7	W	w	£
30	18	8	X	x	÷
31	19	9	Y	y	>
32	1A	:	Z	z	<
33	1B	;	[	{	→
34	1C	<	\	¦	←
35	1D	=	]	}	↑
36	1E	>	↑	~	↓
37	1F	?	←	DEL	*Blank*

KLK Keyboard Lock (ESC h; o33 o150; h1B h68) ESC, then h
SM

Locks the terminal Keyboard and prevents the User from entering data.

KUL Keyboard Unlock (ESC *l*; o33 o154; h1B h6C) ESC, then *l*
RM

Unlocks the Keyboard and permits normal entry of data. The function is only operational when the Terminal is On-Line. It is inoperative in Local Mode.

RNS Reset Non-Destructive Space-Advance (ESC Y; o33 o131; h1B h59) ESC, then Y

Disables Non-Destructive Space-Advance Mode (see next command).

SNS Set Non-Destructive Space-Advance (ESC Z; o33 o132; h1B h5A) ESC, then Z

Sets Non-Destructive Space-Advance Mode, which allows the SPACE Bar to be used: non-destructively, after the RETURN Key is depressed, to move the Cursor over data without altering the data; or destructively, after LINE FEED Key is depressed.

When this mode is enabled, the Line Feed character becomes the normal line-terminator, and if a line is terminated by a Line Feed, striking the SPACE Bar will replace the previous character at the cursor position with a blank. If a line is terminated by a Carriage Return, the Cursor is returned to the beginning of the current line and the SPACE Bar is made non-destructive, allowing it to be used to Space over data.

5.3.2 Cursor Motion - Editing

The following control codes and sequences provide for positioning the Cursor on the Display and, except for FF (Erase Screen) and BSD (Backspace Delete), they do not destroy memory content except in cases where the top line is scrolled away in Roll Mode.

BSP Back Space (H; BS; o10; h08) CTRL, with H; or SHIFT, with DEL

Causes the Cursor to move non-destructively to the left by one column.

If the ANL Switch is set (Topic 4.2) and the Cursor is in the first column of the line, the Cursor will be placed in the 80th column of the previous line. This may cause the Cursor to wrap to the bottom line from the top line if the Display is in Page Mode.

HT Horizontal Tab (I; HT; o11; h09) TAB, or CTRL with I

If tab stops have been set, HT causes the Cursor to advance to the next tab stop or the next foreground field. If no tab stops have been set, the code is inoperative unless background data is displayed. With half-intensity data displayed, the Tab command will cause the Cursor to be positioned to the first character of the next field of foreground (full-intensity) data. Also if ANL Switch is ON, the INFOTON 100 will automatically tab onto the next line if there are no further tab stops on the current line.

5.3.2 Cursor Motion - Editing (continued)

LF Line Feed (J; LF; o12; h0A) LINE FEED, or CTRL with J

Causes the Cursor to move down one line. If the Cursor is on the bottom line and the Display is in Roll Mode, the Display will scroll. If the Display is in Page Mode, the Cursor will "wrap around" to the top line.

FF Form Feed (L; FF; o14, h0C) CTRL, with L

Erase Screen and home Cursor -- See Topic 5.3.4.

CR Carriage Return (M; CR; o15; h0D) RETURN, or CTRL with M

Causes the Cursor to move to the beginning of the present line, or to the start of the next line if CRNL Mode is set (Topic 4.2, S2-2).

CUU1 Move Cursor Up (ESC A; o33 o101; h1B h41) ↑ or ESC then A

Causes the Cursor to move up one line. If the top of the Display is the current line, the Cursor wraps around to the bottom line.

CUD1 Move Cursor Down (ESC B; o33 o102; h1B h42) ↓ or ESC then B

Causes the Cursor to move down one line from its current position. If the current line is the bottom line, the Cursor is positioned on the top line.

CUF1 Move Cursor Right (ESC C; o33 o103; h1B h43) → or ESC then C

Receipt of this control code sequence causes the Cursor to move one column to the right. If the Cursor was located in column 80, the Cursor is positioned at column 1 of the next line.

CUB1 Move Cursor Left (ESC D; o33 o104; h1B h44) ← or ESC then D

This control code causes the Cursor to move one column left. If the current position is column 1, the Cursor is positioned at column 80 of the previous line.

CUH Home Cursor (ESC H; o33 o110; h1B h48) HOME, or ESC then H

Receipt of this control code sequence positions the Cursor to the home position. For both Page- and Roll-Mode, this column 1, line 1.

FBT Back Tab (ESC z; o33 o172; h1B h7A) SHIFT, with BKTAB; or ESC, then z
SBT

If tab stops have been set, ESC z will cause the Cursor to be positioned at the previous tab stop or at the start of the previous foreground field, whichever comes first. If no tab stops have been set, the code is inoperative unless background data is displayed. With half-intensity data displayed, the Back Tab command will cause the Cursor to be positioned to the first character of the next field of foreground (full-intensity) data.

5.3.3 Cursor Addressing - Editing

See aso Cursor Motion (Topic 5.3.2) for Back Tab, Home, and Tab.

SCA Select Cursor Address ("HVP" Request) (ESC f X Y; o33 o146 X Y; h1B h66 X Y)
ESC, then f, then X and Y parameters from Table 5-1.

When the INFOTON 100 receives this control code sequence, it positions the Cursor horizontally and vertically according to the two characters that follow as coordinates for the absolute-cursor-address, column X (1-80) and line Y (1-24), respectively.

After keying ESC f, enter the ASCII characters that represent the column X and line Y, as determined by values from the lower right corner of the boxes in columns 2 through 6 of Table 5-1.

Example: ESC f G + represents column 40, line 12.

The SCA command is ignored if an attempt is made to place the Cursor at any column higher than 80, or any line higher than 24.

5.3.4 Delete, Erase, and Insert - Editing

SP Space (SP; o40; h20) SPACE Bar

Space is represented by a "blank" character-space on the Display which *may or may not overwrite* the previous character at the cursor location, depending on the status of Non-Destructive Space-Advance Mode (See RNS and SNS, Topic 5.3.1.). Therefore Space is considered one of the editing features of the INFOTON 100.

FDL Delete Line (ESC M; o33 o115; h1B h4D) FUNCTION, with DL; or ESC, then M
DL

When this control code sequence is received, the line on which the Cursor is currently positioned is deleted, lines below are scrolled upward, and the Cursor is positioned at the beginning of the new next line.

FF Erase Screen (Form Feed) (L; FF; o14; h0C) CTRL, with L; or CTRL, with *l*

This code causes the entire screen to be erased (deleted) and the Cursor to be positioned to the "home" position at the upper left corner of the screen, column 1, line 1.

FEP Erase to End of Page (ESC J: o33 o112; h1B h4A) FUNCTION, with EP; or ESC, then J
EOP

Receipt of this control code sequence clears all *foreground* data fields between the present cursor location and the end of the display page. The cursor position remains unchanged.

5.3.4 Delete, Erase, and Insert - Editing (continued)

FEL Erase to End of Line (ESC K; o33 o113; h1B h4B) FUNCTION with EL, or ESC then K
EOL

Receipt of this control code sequence clears all *foreground* data fields between the present cursor location and the end of the current line. The cursor position is unchanged.

FIL Insert Line (ESC L; o33 o114; h1B h4C) FUNCTION with IL, or ESC then L
IL

When this control code sequence is received, the Terminal inserts a blank-line following the line on which the Cursor is presently positioned, shifting the following lines downward, and positions the Cursor at the beginning of the new blank line.

5.3.5 Input/Output Mode Selection and Control

5.3.5.1 PRINTER CONTROLS

Printer On/Off codes are affected by the Copy Code Option (Topic 3.6.3).

FCN Printer On (Q; DC1; o21; h11) FUNCTION with CPY (with Printer Copy Mode off), or
PCM CTRL with Q, (or ESC then 5)

This code is not transmitted; but it sets Printer Copy Mode if it is not already set, causing the Terminal to route to the Printer Port all data that follows, as it is received.

FCF Printer Off (S; DC3; o23; h13) FUNCTION with CPY (with Printer Copy Mode on), or CTRL with S, (or ESC then 6)

This control code is not transmitted, but resets Printer Copy Mode if it is set.

FPP Print Page (locally) (ESC O; o33 o117; h1B h4F) FUNCTION with PRT, or ESC then O
PPM Printer Page Mode

Receipt of this control code sequence does not send an ESCape Sequence; but it sets Printer Page Mode, causing the entire contents of the Display to be printed locally to any hard-copy device attached to the Auxiliary Interface. During the Print Page function:

- trailing Spaces are suppressed,
- leading and embedded Spaces are printed,
- ten NULL codes are sent following a Carriage Return/Line Feed, and
- the Cursor underscores each character as it is sent to the Printer.

5.3.5.2 CRT CONTROLS

ECN Video (ECHO) On (ESC n; o33 o156; h1B; h6E) ESC then n

This code sequence enables video operation so incoming data will be "echoed" to the screen as it is received, if LOCAL ECHO Switch (rear panel) is ON.

ECF Video (ECHO) Off (ESC N; o33 o116; h1B h4E) ESC then N

This code sequence causes all data and control codes to be routed to only the Printer Port when Printer Copy Mode is set, and it suppresses execution of control codes and display or echo of any new data on the screen.

5.3.5.3 COMMUNICATIONS CONTROLS

ETX End of Text (C; ETX; 03) CTRL with C

EOT End of Transmission (D; EOT: 04) CTRL with D

The action which the INFOTON 100 takes upon receipt of these codes depends upon the setting of the rear penal switches (See S2-4 and S2-5, Topic 4.2.). If the Terminal is operating in Half Duplex Mode and the switch settings define one of these codes as a line turn-around code, the direction of data flow is reversed from its current state.

5.3.6 Status Reporting

RCA Read Cursor Address (ESC r; o33 o162; h1B h72) ESC then r

When received, RCA "request" causes the INFOTON 100 to transmit the Horizontal-Vertical Position (HVP) response sequence, which contains the column X and line Y coordinates for the current cursor positon, as described in the following paragraph.

HVP Horizontal-Vertical Position (response upon receiving ESC r)
(ESC f X Y; o33 o146 X Y; h1B h66 X Y)

HVP is the "response" transmitted to the Host upon receiving an RCA request. HVP takes the form of a report string, where the X and Y characters represent the respective column (1-80) and line (1-24) cursor-position coordinates from the lower right corners of the boxes in columns 2 through 6 of Table 5-1.

Example: ESC f o 7 represents column 80, line 24.

SCA See Topic 5.3.3 for Select Cursor Address (SCA).

5.3.7 Special Commands

5.3.7.1 ASCII CONTROL CODES

In addition to those mentioned in Topic 5.3, any ASCII control code, from columns 1 and 2 in Table 5-1, can be transmitted to the Host CPU in On-Line Mode.

By depressing and holding the CTRL Key while striking the character from column 4 (and 6) that aligns with column 1, or the character from column 5 (and 7) that aligns with column 2, the appropriate ASCII control is produced. For convenience, the appropriate characters are shown in Columns 1 and 2 with underscores (denotes use of the CTRL Key).

Example: CTRL and @: (@) = NULL

BEL Sound Alarm (G; BEL; 07) CTRL, with G

Activates a 1500-Hertz audible tone for one-tenth of a second, to "beep" for operator attention or intervention, when the Bell Code is received. Transmits Bell Code when CTRL/G is keyed in On-Line Mode.

INFOTON 100

ADDENDUM TO THE PRELIMINARY USERS MANUAL
FOR
BLOCK MODE AND PROGRAMMABLE FUNCTION KEYS

August 1979
Revision A

INFOTON

TABLE OF CONTENTS

INFOTON

BLOCK MODE

When operating in Block Mode, all data entered from the keyboard is stored in display memory. Transmission occurs only when the ENTER key is depressed or the Host inititates the transmission remotely. When transmission is initiated, all unproteced data from the Home position to the character at the cursor location is transmitted, including any spaces. A transmit marker (sold rectangle) is then stored at the cursor location and the cursor is advanced one position. If any transmit marker was previously existing on the screen, the transmission will occur from this position, instead of the Home position, to the character at the cursor location. If more than one transmit marker was previously existing on the screen, the transmission will occur from the last transmit marker.

If it is desired to re-transmit a particular message, the following procedure is recommended:

--Backspace the cursor so it is under the transmit marker.

--Issue the Space Code (ASCII SP) to erase the transmit marker.

--Backspace the cursor so it is under the space.

--Depress the ENTER key to re-transmit the message.

By following this procedure, the re-transmission will occur in a manner identical to the orginal transmission.

NOTE

This procedure may be stored in one of the programmable Function keys, thus making message re-transmission a simple one-key depression from the keyboard. The one exception is that the ENTER Key, persay, cannot be stored in a Function Key because it does not generate a code. The remote transmit command, however, may be stored in a Function Key to initiate the re-transmission.

All buffered messages transmitted from the terminal will be terminated by a Message Termination Character each time a transmission occurs. The Message Termination Character may vary depending on whether Half-Duplex (HDX) or Full-Duplex (FDX) is selected. Four (4) Message Termination Character selections are offered and are selected by rear panel switches S2-4 and S2-5 as follows:

Switch S2-4	Switch S2-5	MESSAGE TERMINATION CHARACTER FDX	HDX
OFF	OFF	EOT	EOT
OFF	ON	ETX	ETX
ON	OFF	CR/Terminates each line transmitted	CR/Terminates each line transmitted; EOT terminates entire message.
ON	ON	CR	CR ETX

When operating in Block Mode, all data received from the Host is intially protected (half-intensity). In order to display unprotected data, the Host must issue the set unprotect command, ESC 3. All data keyed from the keyboard is unprotected (full intensity).

Several commands are provided for Block Mode control. Before listing these commands, the following definitions should be noted:

PAGE - The entire screen, 80 columns X 24 lines (1920 characters).

FIELD - A group of contiguous protected or unprotected characters that has a single line limitation.

COMMAND NAME	CODE SEQUENCE	DESCRIPTION
Set Block Mode	ESC o	Block Mode may be selected from the keyboard or remotely via this command.
Set Character Mode	ESC p	Character Mode may be selected from the keyboard or remotely via this command.
Set Transmit Marker	ESC d	This command allows a transmit marker to be set at the cursor location without transmitting any data.
Remote Transmit	ESC c	This command allows the Host to inititate a Block Mode transmission which is identical to the operator depressing the ENTER key.

Insert Character	ESC @	A space will be inserted at the current cursor position. All unprotected characters from the current cursor position will be shifted right. This command will affect all unprotected characters from the present cursor position to the end of the current field.
Delete Character	ESC P	The character at the current cursor position will be deleted. All unprotected characters to the right of the cursor will be shifted one position to the left. This command affects all unprotected characters from the present cursor position to the end of the current field.
Set Unprotect	ESC 3	All data following this command will be unprotected (full-intensity).
Set Protect	ESC 4	All data following this command will be protected (half-intensity).

PROGRAMMABLE FUNCTION KEYS

A row of eight (8) programmable Function keys is available which, when used in conjunction with the SHIFT key, provide for effectively 16 keys. Each key will transmit the following predefined sequences if they are not programmed otherwise.

F1	ESC \ A		F1	(Shifted)	ESC \ I
F2	" " B		F2	"	" " J
F3	" " C		F3	"	" " K
F4	" " D		F4	"	" " L
F5	" " E		F5	"	" " M
F6	" " F		F6	"	" " N
F7	" " G		F7	"	" " O
F8	" " H		F8	"	" " P

Each key may also be programmed to transmit a user-defined sequence when depressed. The sequence may be a maximum of 48 characters long and can be down-line loaded from the Host via ESCAPE sequence. If less than 48 characters are to be loaded into a key, the sequence must be terminated with the NULL character (Control SP).

The sequence may contain displayable characters, control codes or ESCAPE sequences and can be called by remote command from the Host or by the operator depressing the particular Function key. The sequence of characters stored in the Function key will then be executed as if typed on the keyboard (i.e. in Character Mode the sequence will be transmitted; in Block Mode the sequence will go only to display memory). The one exeption is that by bracketing the sequence with the ASCII RS (CTRL ↑) and US (CTRL ←) codes, the sequence will be transmitted without local display.

The user may "string" Function keys together by loading a call for one Function key into another Function key. The maximum number of characters that can be called by a single key depression is 255. CAUTION: No check is made for an indefinite loop.

The following commands are used to control the Function keys:

COMMAND NAME	CODE SEQUENCE	DESCRIPTION
Load Function key	ESC w "X"	This sequence loads a Function key with data. "X" is a variable defining which Function key is to be loaded (i.e. "X" = A, load Function key F1).
Call Function key	ESC i "X"	This sequence is used for remotely calling a Function key. "X" is a variable defining which Function key is to be called (i.e "X" = B, call Function key F2).

INFOTON

REAR PANEL SWITCHES (shown on next page)

The INFOTON 100 Block Mode terminal rear panel switches will function as described in Section 4.2 of the INFOTON 100 Operators Manual with the following exceptions:

--Switch S2-3 is now reserved for future use.

--Switches S2-4 and S2-5 define the Message Termination Character as described in the Block Mode section of this addendum. When operating in Half-Duplex Character Mode, these switches define the line turn-around code as described in the INFOTON 100 Operators Manual.

--Switch S2-7 is a LOCAL Echo ON/OFF selector. This switch is operative ONLY when operating in Character Mode and determines whether or not data entered on the keyboard is echoed locally for display. When this switch is ON, data entered from the keyboard is displayed and transmitted. When this switch is OFF, data entered on the keyboard is transmitted and displayed only if the Host computer or Modem echos the transmitted data.

--Switch S2-8 is the Half-Duplex/Full-Duplex selector. In the ON position, HDX is selected; in the OFF position FDX is selected.

--Switches S3-4 and S3-5 define how the parity bit will be set in each character, according to the following table:

S3-4	S3-5	PARITY
OFF	OFF	No parity
OFF	ON	No parity
ON	OFF	Even
ON	ON	ODD

NOTE

If ODD or EVEN parity is selected parity will be checked on received characters and generated on transmitted characters.

--Switch S3-8 is the Display Mode Selector and will function as described on Page 14 on the INFOTON 100 Operator's Manual. When this switch is OFF, Page Mode is selected. When Page Mode is selected and the terminal is in Block Mode, the RETURN and LINE FEED Keys should not be used to position the cursor within a protected format. The TAB/BKTAB, HOME, ←, ↑, ↓, and → Keys should be used in this case.

--Switch S3-6 is used to enable or disable the Self-Test feature. In the ON position, Self-Test is enabled. In the OFF position Self-Test is disabled per the following:

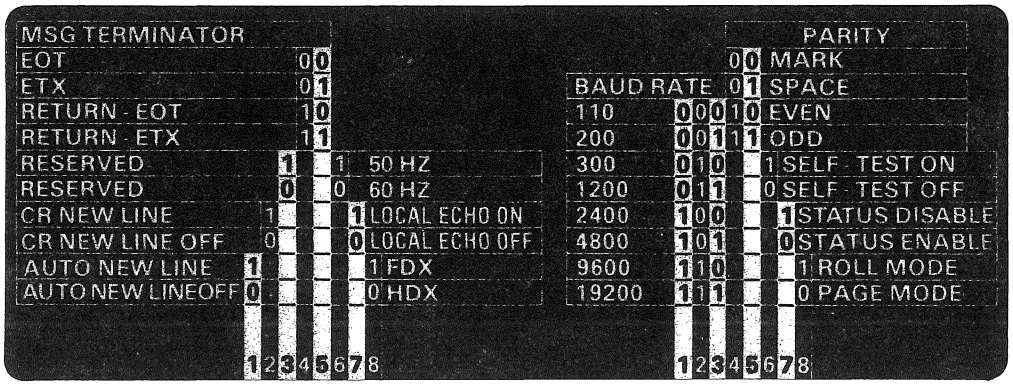
MONITOR LOGIC AND CHARACTER GENERATOR TEST

With the unit powered OFF, set switch S2-8 ON, S3-6 ON and S3-7 OFF and turn the power ON.

Note that the ASCII Code Chart and line drawing characters appear on the screen in both high and low intensities and the keyboard is locked.

In addition to the above test, whenever the unit is powered ON, a Firmware Checksum and RAM Test is automatically performed as a microprocessor subsystem confidence test. Successful completion of this test with no detected errors are signaled to the operator via the BELL sound approximately five seconds after power is applied to the terminal.

INFOTON 100 Rear Panel Template for Block Mode Version



INTERFACE SELECTION

The INFOTON 100 provides an EIA RS232-C and 20 milliampere Current Loop Interface as standard equipment. Both interfaces are enabled at all times and may be selected by wiring the appropriate cable pins as described in Figure 4.5 of the INFOTON 100 Operators Manual.

The only exception to this figure is that the Data Terminal Ready lead (pin #20) on the EIA interface is ALWAYS "high" even if the terminal is in LOCAL Mode. This has been done to prevent the terminal from disconnecting from the Host computer when the terminal is placed into Local Mode.

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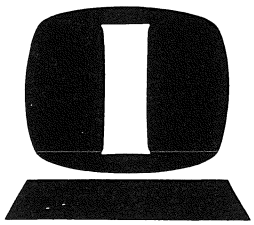

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