HONEYWELL

TERMINALS VIP7200/7205/7207 OPERATION

HARDWARE

TERMINALS

VIP7200/7205/7207 OPERATION

SUBJECT

General Description, Control and Indicator Information, and Operating and Maintenance Procedures for the VIP7200/7205/7207 Visual Information Projection Terminals

SPECIAL INSTRUCTIONS

This manual supersedes *VIP7200 and VIP7205,* Order No. AX31, Rev. 1, dated March 1978. Change bars in the margins indicate technical additions and changes; asterisks indicate deletions. Appendix E, VIP7207 Keyboard Character Output Code Matrix, is completely new; change bars are not used.

The following notice is provided in accordance with the United States Federal Communications Commission's (FCC) regulations.

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance with limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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Preface

This manual describes the operating procedures and functional characteristics of the VIP7200/7205/7207 Visual Information Projection terminals.

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GENERAL DESCRIPTION

Honeywell's Visual Information Projection (VIP) 7200/7205/7207 keyboard-display terminals are self-contained, table-top devices designed to operate with Honeywell systems. The VIP terminal (Figure 1) consists of a separable keyboard joined by cable to a CRT Display/Logic Unit for convenient operation.

The VIP terminal provides both keyboard data entry and visual data display. The keyboards on both the VIP7200 and VIP7205 generate all 128 codes for the seven-bit ASCII character set. The VIP7207 keyboard generates 102 ASCII characters excluding the lowercase alphabet. The VIP7200 displays 64 ASCII characters including only uppercase alphabet; any lowercase alphabet characters it receives are displayed as uppercase alphabet. The VIP7205 displays 95 ASCII characters including both uppercase and lowercase alphabets. The 12-inch CRT screen displays 1920 characters on 24 lines of 80 characters each.

Later model VIP7200s provide display of 95 ASCII characters as an installation option. The VIP7207 display character set consists of 69 characters including uppercase alphabet, numerics, 32 special symbols and space.

The keyboard includes a numeric pad of 11 keys that permit numeric data entry from a calculator-type of arrangement. The VIP7207 keyboard provides a data entry arranged numeric pad embedded in the touch-typing area in addition to the calculator-like arrangement. Also the keyboard's multikey (*n*-key) rollover characteristic helps guard against character loss.

The VIP terminal communicates in the bit and character asynchronous mode at data transfer rates of up to 9600 bits per second (bps). Transfer rate is selected by the operator and is determined by the communication interface and data rate speed of the host system. Although the terminal is primarily intended for operation on a point-to-point link via a full-duplex current loop or RS-232-C voltage interface, it also has the capability of half-duplex operation.

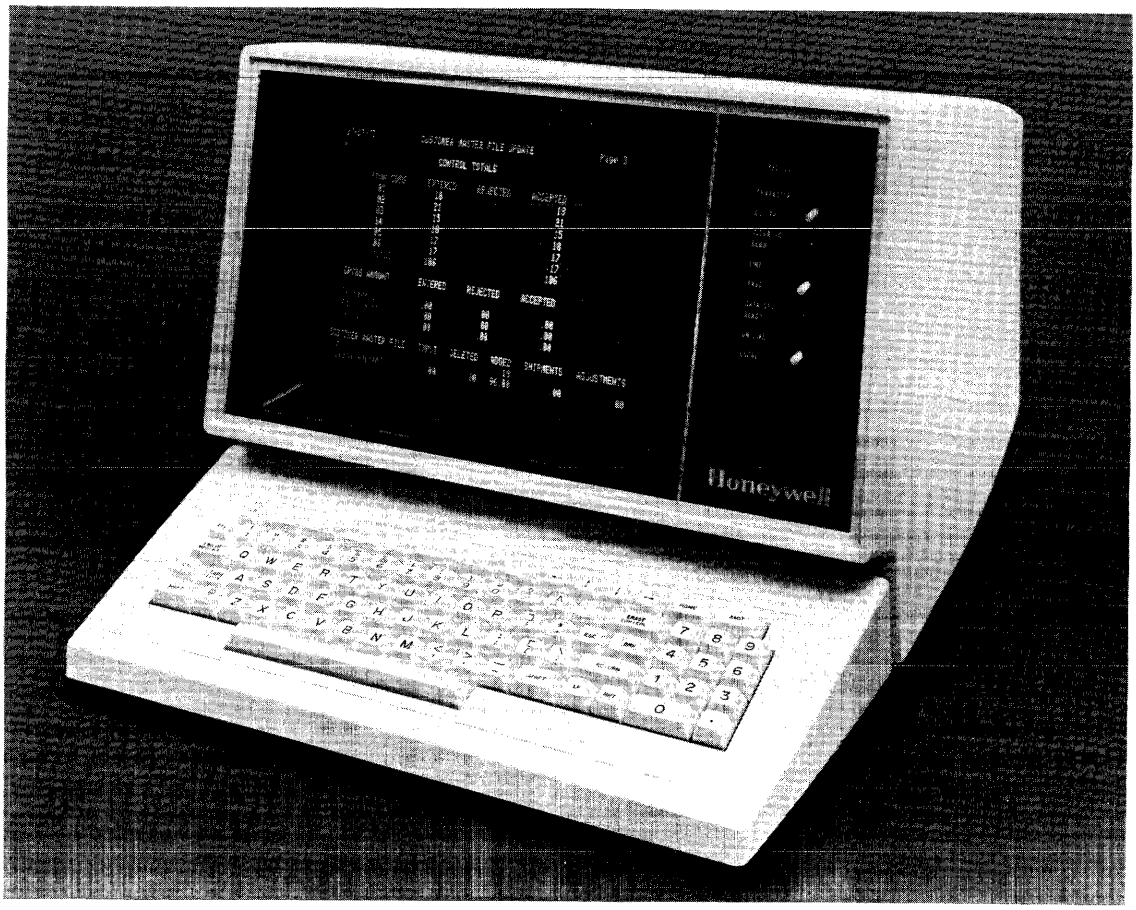


Figure 1. VIP7200 and VIP7205

TERMINAL COMPONENTS

VIP Assembly

The VIP7200/7205/7207 keyboard and display modules are contained in separate enclosures. The connecting cable allows the units to be separated by up to three feet to satisfy an application arrangement and to provide operator comfort.

Keyboard Module

The VIP7200 and VIP7205 keyboard contains 86 data and control keys for generation of data and control signals. ASCII character codes are generated when the keys are pressed. The arrangement of the alphanumeric keys is consistent with that of a common office typewriter.

The VIP7207 keyboard contains 84 keys arranged in a keypunch style compatible with the Level 6 DEF-II (Data Entry Facility-II) software. There are 67 of these keys which have automatic repeat at 12 characters-per-second after a 0.5-second delay when held down.

The keyboard configuration and layout is shown in Figure 4. Keyboard-generated ASCII code characters are shown in Table 2.

Display Module

The VIP display screen is a 12-inch nonglare cathode ray tube (CRT) which produces white display symbols on a gray background. Twenty-four lines of 80 characters each may be displayed at any one time, allowing a maximum display of 1920 characters. The viewing area is nine inches wide by six inches high. The character size is 0.080 inches wide by 0.175 inches high for all display formats. A carriage return is used to move the cursor to the left margin. A line feed code moves the cursor (entry marker) to the next line down. When the LF code is received following entry in the 24th line, the top line of data (line one) will scroll and disappear from the screen. However the user can select a nonroll mode to prevent the data of top line 1 from rolling up and becoming lost upon completion of bottom line 24. The 24th line is used to display status when operating with the DEF-II (Level 6 Data Entry Facility-II) software. The VIP7207 is normally used with DEF-II.

The displayable characters of the VIP7200 are a modified ASCII set consisting of the uppercase alphabet, numeric characters, and special symbols shown in Table 2. There are a total of 63 displayed characters plus space. The optional 95-character set includes both the uppercase and lowercase alphabets. The VIP7207 displays 69 characters excluding the lowercase alphabet.

INTERCONNECTIONS/SYSTEM INTERFACE

Communication Interface

Either an EIA voltage interface or a current loop interface can be used with the VIP terminal. The interfaces are asynchronous, two/four-wire, and half/full-duplex; capable of two-way simultaneous or two-way alternate data transfer; and operable at data rates of up to 9600 bps. See Table 1. The terminal operates at switch-selectable baud rates between 110 and 9600 bps via a BAUD RATE select switch located at the rear of the VIP terminal. The VIP7207 requires a full duplex communications service to be compatible with the DEF-II software.

EIA Interface

The VIP terminal interfaces to a full-duplex communications service or to a half-duplex service with line turnaround functions. Communication links from remote locations may be over either switched or private voice-grade lines using modems of the Types 103A or 212A Bell System Data Sets or equivalent.

A 10-foot multiconductor cable and connector, compatible for use with the Bell modem, is provided with the terminal. To allow a direct cable connection between the host system and the VIP terminal, an additional direct-connect cable can be ordered. The terminal should not be located more than 50 feet away from the host processor for this direct connection.

Current Loop Interface

The VIP terminal provides a full-duplex current loop interface that can be used for the cable connection of the terminal to the host system over distances not exceeding 1000 feet. The current loop interface will operate at either 20 or 60 milliamperes. The VIP terminal *does not provide* the necessary line current for the current loop interface. This current must come from the host system or a source external to the VIP terminal.

TABLE 1. VIP COMMUNICATION INTERFACE CHARACTERISTICS

Communication Characteristics	EIA Interface Host System[a,b]	Current Loop Interface Host System[c]	EIA Interface to Auxiliary Device[b] (Flow-Through Port)
Transmission Mode	Asynchronous	Asynchronous	Asynchronous
Directional Capability	Half- or Full-Duplex	Half-Duplex (Level 66) Full-Duplex	Full-Duplex
Data Transfer Rate – Direct Connect (No Modem)[d]	110-9600 bps	110-9600 bps	110-9600 bps
Data Transfer Rate (With Modem)[d]	110-1200 bps	Not Applicable	Not Applicable

a Bell System Data Sets 103A, 212A or equivalent (modem connect).
b Cable connection not to exceed 50 ft (direct connect).
c Cable connection not to exceed 1000 ft (direct connect).
d Determined by communication interface, data rate speed of host system or auxiliary peripheral used with VIP terminal.

Auxiliary Device Interface

The auxiliary device interface is a full-duplex, limited-function EIA interface that may be used to connect a teleprinter or an I/O device to the communications service of the VIP terminal. Interconnection between the VIP terminal and the auxiliary device is via a specially ordered cable not exceeding 50 feet in length.

Although the auxiliary interface is always an EIA configuration, the host system communication interface may be connected in either an EIA or a current loop interface. Data traffic and conversion between these two interfaces is processed and controlled by the VIP logic.

Interface Timing and Data Structure

The VIP terminal provides configuration data rate, character structure, and character parity sense for the communication interfaces.

NOTE: At the 110 baud rate it is possible for an experienced operator to key faster than the interface timing specified. This may result in errors.

Data Rate (bps): *

110, 150, 300, 600, 1200, 1800, 2400, 4800, or 9600 bps

Character Structure:

10-bits (start, 7-data bits, parity, stop)
11-bits (start, 7-data bits, parity, stop, stop)

Parity Generation:

Odd, even or mark ("1") parity for 10- and 11-bit characters.

VIP CHARACTERISTICS AND SPECIFICATIONS

Display Module:

Screen Size – 12 inches diagonal (80.48 cm)
Phosphor – P4
Line Format – 24 lines of 80 characters each per line (1920-character capacity)

Character Set –
VIP7200: 64 ASCII character set (uppercase alphabet, numerics, and special symbols)
VIP7205: 95 ASCII character set (uppercase and lowercase alphabets, numerics, and special symbols)
VIP7207: 69 ASCII character set (uppercase alphabet, numerics, and 32 special symbols plus space)
Character Size – 0.080 inches wide x 0.175 inches high (0.203 x 0.406 cm), 5 x 7 dot matrix within a 7 x 10 field
Refresh Rate – 60 frames/second (50 Hz model, 50 frames/second) locked to line frequency.

Keyboard Module:
Typewriter Configuration – 86 solid-state keys (36 alphanumeric, 50 symbol, function and control keys).
Capability – Full 128-character, 7-bit ASCII code set
Cap Lock – Inhibits character generation of lowercase alphabet and five special symbols \, ~, } , ¦, and { .
Data Entry Configuration – 84 solid-state keys, auto repeat on 73 keys
Capability – 102 characters, 7-bit ASCII code set (excludes lowercase alphabet)

Communications Interface:
EIA Interface – Conforms to RS-232-C standard; compatible with Bell Data Sets 103A, 202D, 212A, or equivalent
Current Loop Interface – 20 mA or 60 mA
Auxiliary Device Interface – Conforms to RS-232-C for connection of auxiliary device (e.g., teleprinter)
* Data Transfer Rate (bps) – Switch-selectable rates of 110, 150, 300, 600, 1200, 1800, 2400, 4800, and 9600.
Mode – Half-/full-duplex, asynchronous
Code – ASCII
Parity – Choice of odd, even, or mark (always "1")
Character Length – Selectable 10 or 11 bits

General Characteristics:
Keyboard Physical Characteristics:
Width: 17.88 in. (45.41 cm)
Depth: 8.00 in. (20.32 cm)
Height: 3.00 in. (7.62 cm)
Weight: 5 lb (2.3 kg)
Display Physical Characteristics:
Width: 18.12 in. (46.02 cm)
Depth: 17.50 in. (44.45 cm)
Height: 13.12 in. (33.32 cm)
Weight: 34 lb (15.4 kg)
Overall Characteristics:
Width: 18.12 in. (46.02 cm)
Height: 13.12 in. (33.32 cm)
Depth: 23.80 in. (60.45 cm)
Weight: Approximately 40 lb (18.2 kg), including keyboard and display module
* Electrical Characteristics:
105 to 120 Vac – 70 W, 60 Hz
220/240 Vac – 70 W, 50 Hz

CONTROLS AND INDICATORS

The following is an explanation of the manual controls and connections, the various keys on the keyboard, and the VIP screen and displays.

Rear Control Panel

The controls and connections, located on the back panel of the VIP terminal, are shown in Figure 2 and are described below:

POWER OFF/ON: A two-position switch that controls ac power to the terminal. Power indicator on front panel will light when ac is available.

TERMINAL FUSE: 2.0 A, 250 V; slow blow fuse (F1).

J1 DATA SET: Rear input connection for data set (modem).

J2 EXT PORT: Rear input connection for auxiliary device (external port).

J3 KEYBOARD: Rear input connection for keyboard.

Figure 2. Rear Control Panel

ROLL/PAGE: A two-position switch. In ROLL position, roll-up action of top line one data is initiated upon completion of data entry into bottom line 24 and when the Line Feed key (LF) is pressed. Data displayed rolls up one line; the initial and top line one data is rolled off the screen. In PAGE position, upon completion of data entry into bottom line 24, the screen data is held in place and prevented from scrolling by the LF (LINE FEED) and automatic CR/LF functions (CARRIAGE RETURN/LINE FEED) following line 24.

DUPLEX/HALF-FULL: A two-position switch offering transmission capabilities in either half- or full-duplex. The VIP7207 normal setting is full-duplex.

MODEM SPEED HI-LO: A two-position switch that permits operation with two-speed modems as needed in certain United Kingdom and European applications. United States applications require that the switch be set to HI.

BAUD RATE: Switch-selectable data rates available by setting the BAUD RATE switch to positions 3, 5, 6, 7, 9, 10, 11, 13, and 15 to correspond with the desired data rates of 110, 150, 300, 600, 1200, 1800, 2400, 4800, and 9600 bps, respectively. Transfer rate is determined by the communication interface and data rate of the host system with which the VIP terminal is used.

LOCAL COPY-ECHO: A two-position switch that operates in conjunction with the setting of the ONLINE/LOCAL switch located on the front panel of the device. In ECHO (echoplex) position and with the ONLINE/LOCAL switch set to ONLINE, the keyboard (output data path) is rendered independent of the display screen (input data path) and only the received characters are displayed. This is the normal operating configuration for the VIP7207. With the switch in LOCAL COPY and ONLINE/LOCAL set to ONLINE, keyed data is displayed simultaneously with its transmission to the host system.

STOP BITS 1-2: One or two stop bits per character; switch-selectable positions 1 and 2. Selection is determined by host system data rate and application.

BRIGHTNESS: A control that adjusts screen brightness. Rotating the knob clockwise intensifies the image brightness.

Front Control Panel

The controls and connections located on the front panel of the VIP terminal are shown in Figure 3 and are described below:

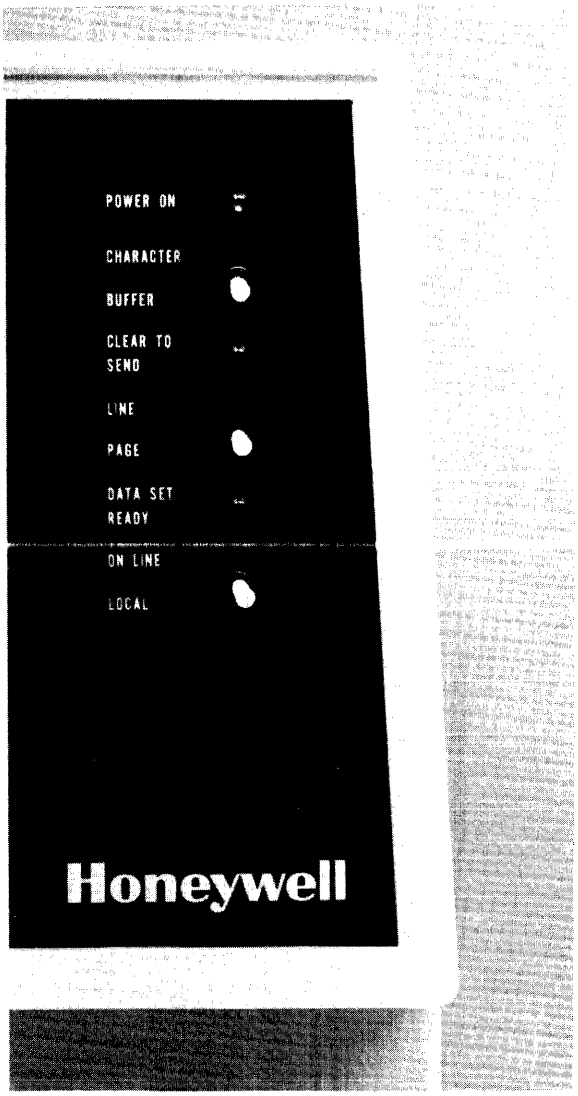


Figure 3. Front Control Panel

POWER ON: (Indicator) — Lights when ac power is available to the terminal.

CHARACTER/BUFFER: — A two-position switch that operates in conjunction with the setting of the LOCAL COPY-ECHO switch located on the rear panel of the device. In BUFFER position and with the LOCAL COPY-ECHO switch set to LOCAL COPY, keyboard data is displayed and editing functions may occur but data is not transmitted until the XMIT key initiates a block (page or line) rather than a character-by-character transmission. With the switch in CHARACTER and LOCAL COPY-ECHO set to ECHO, characters are transmitted as they are keyed. This latter method is the normal operating method for the VIP7207.

CLEAR TO SEND: (Indicator) — When lit, indicates that the VIP terminal is allowed to transmit.

LINE/PAGE: — A two-position switch that selects either LINE or PAGE buffered transmission. Transmission is of data from the beginning of the page or line up to the current cursor position. This switch is not effective in character-at-a-time operating mode.

DATA SET READY: (Indicator) — When lit, indicates that the communications equipment (data sets, modems) are operable and that a communications link has been established.
When lit along with the CLEAR TO SEND indicator, it indicates:
- "Transmit" state if in half-duplex mode
- "Send/Receive" state if in full-duplex mode

ONLINE/LOCAL: — A two-position switch that places the VIP terminal in either an offline (LOCAL) or ONLINE mode with respect to the host system and auxiliary unit of the terminal.

NOTE: This switch, when set to LOCAL, overrides the operation of the LOCAL COPY-ECHO switch setting located on the rear panel of the device.

Keyboard Configuration and Character Display

The typewriter-arranged keyboard contains 86 keys (alphanumeric and special graphics), command control keys, numeric keypad group, editing function keys, and special function keys. The keyboard can generate all 128 ASCII codes shown in Table 2. However, the displayable character set is determined by the VIP terminal model, VIP7200 or VIP7205. The keyboard configuration is shown in Figure 4.

The VIP7200 can display a 64 ASCII-character set in uppercase alphabet only, as shown in columns 2 through 5 of Table 2. Lowercase alphabet characters when entered through the keyboard or received in transmission are also displayed as uppercase characters.

The VIP7205 can display both uppercase and lowercase alphabet characters of a 96 ASCII-character set, as shown in columns 2 through 7 of Table 2.

Columns 0 and 1 in Table 2 list the ASCII control codes which, like the DELETE code, are not displayable.

The VIP7207 can display a 69 ASCII character set excluding the lowercase alphabet.

TABLE 2. ASCII CODE SET

Row	Bits B4	B3	B2	B1	Column 0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
				B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
1	0	0	0	1	SOH	DC1	!	1	A	Q	a	q
2	0	0	1	0	STX	DC2	"	2	B	R	b	r
3	0	0	1	1	ETX	DC3	#	3	C	S	c	s
4	0	1	0	0	EOT	DC4	$	4	D	T	d	t
5	0	1	0	1	ENQ	NAK	%	5	E	U	e	u
6	0	1	1	0	ACK	SYN	&	6	F	V	f	v
7	0	1	1	1	BEL	ETB	'	7	G	W	g	w
8	1	0	0	0	BS	CAN	(	8	H	X	h	x
9	1	0	0	1	HT	EM	)	9	I	Y	i	y
10	1	0	1	0	LF	SUB	*	:	J	Z	j	z
11	1	0	1	1	VT	ESC	+	;	K	[	k	{
12	1	1	0	0	FF	FS	,	<	L	\	l	¦
13	1	1	0	1	CR	GS	–	=	M	]	m	}
14	1	1	1	0	SO	RS	.	>	N	^	n	~
15	1	1	1	1	SI	US	/	?	O	–	o	DEL

NOTE: Neither the ASCII control codes in columns 0 and 1 nor DEL in column 7 are displayable. The lowercase alphabet in columns 6 and 7 cannot be generated from the VIP7207 keyboard.

VIP7200 AND VIP7205 KEYBOARD

Alphanumeric/Special Graphic Keys

The alphanumeric keys consist of 48 character keys including 26 alphabetic, 10 combination numeric and graphic keys, 11 dual graphic, and a SPACE key.

Command Control Keys

The ten command control keys shown in Figure 4 and described below are nondisplayable keys that have a decided effect on the operational state of the VIP terminal by producing certain control codes. These control codes are generated by either a single stroke key action of the designated key(s) in the nonshift mode or in the shift and control mode by simultaneously pressing the designated key and any one of the command control keys.

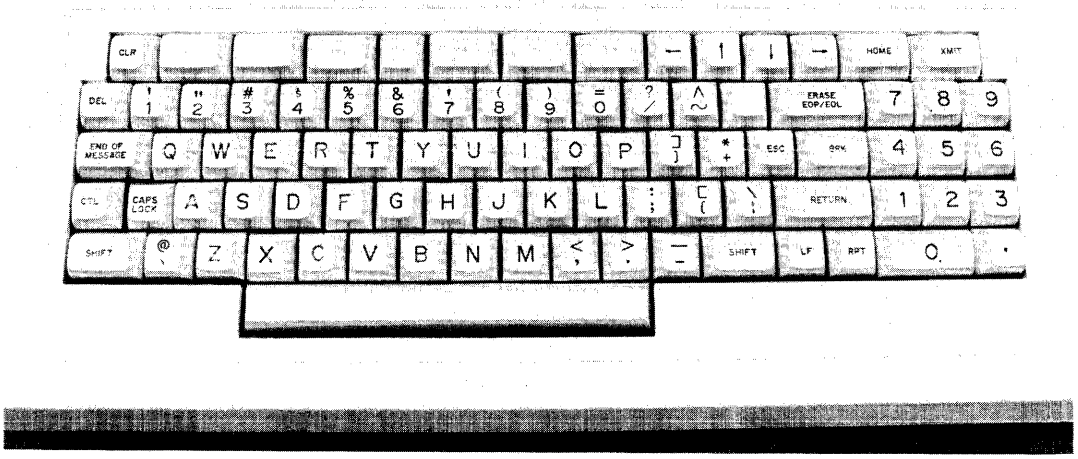


Figure 4. VIP7200 and VIP7205 Keyboard Layout

CAPS LOCK	The CAPS LOCK key locks the keyboard in an uppercase alphabet operating mode in the same manner as the SHIFT key, except that it affects only the alphabetic character, not the numerics, and five dual graphic keys (`, ~, } , ¦ , and {). This key causes no output code generation.
ESC (Escape)	Used to produce ASCII code ESC (independent of SHIFT, CAPS LOCK, and CONTROL keys). When used with alphabet keys in a character-by-character transmission mode, it extends the capability of the VIP terminal to communicate function codes to the host system. The existing function code keys generate a two-character ESC code sequence upon pressing one key. Pressing two keys (the ESC and an alphabet key) extends this capability but adds an additional keystroke without unique key labels.
SHIFT	The SHIFT key causes no output code generation by itself, but when pressed in combination with any applicable key it generates codes to correspond to ASCII alphabetic uppercase characters or to the codes corresponding to the upper legends engraved on the keytop. For operator convenience the keyboard features two SHIFT keys.
CTL (Control)	This key is used to generate the control function codes of the ASCII code set (columns 0 and 1 in Table 2) but must always be used with another key to produce the desired code. This key causes no output code generation by itself, but causes bits six and seven of another character to become zero (if not already zero) while the keys are being pressed.
RETURN	Used to produce ASCII code CR (Carriage Return – independent of SHIFT, CAPS LOCK, and CONTROL keys).
LF (Line Feed)	Used to produce ASCII code LF (independent of SHIFT, CAPS LOCK, and CONTROL keys).
RPT (Repeat)	Produces no output when activated alone. When first pressed in conjunction with another key it causes repeated generation of the output code of that key as long as the RPT key is kept pressed.
BRK (Break)	This key allows the operator to generate an interrupt (a "key break-in" to the host processor) which can be used to suspend transmission. A spacing or all zeros condition is generated for 200 milliseconds but the key is useful only in full-duplex operation.
BLANK KEYTOP	This key is included on the keyboard for future use. At present level of definition, no logic function or output action results from pressing this key.
END OF MESSAGE	This key is used to provide line turnaround control when operating the VIP in its character-by-character half-duplex mode. Pressing the key switches the terminal logically from a send to a receive state.

Numeric Keypad

The numeric keypad as shown in Figure 4 consists of 11 keys, with numeric legends 0 through 9 and the decimal point (period). When pressed, these keys always generate ASCII codes indicated in column 3 - row zero through nine (numerals 0-9) and column 2 - row 14 (period-decimal). Refer to Table 3.

The actions of these keys are independent of the SHIFT and CAPS LOCK keys. If pressed in combination with the CONTROL key, no output code is generated (see Table 2).

Editing Control Function Keys

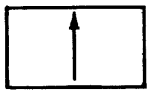
The editing control function key group consists of eight nondisplayable keys that provide a variety of editing capabilities involving the "active position" indicator known as the cursor. Except for the ERASE EOP/EOL (which operates with the SHIFT key), these keys are independent of the position of the SHIFT, CAPS LOCK, and CONTROL keys. The output codes generated by these keys consist of a two-character (escape) sequence; these ESC codes and characters are indicated in Table 3.

TABLE 3. RESPONSE TO TWO-CHARACTER ESCAPE SEQUENCE CODES AS RECEIVED CODES

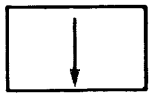
				Column	0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
	Bits			B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
Row	B4	B3	B2	B1								
0	0	0	0	0							RIS	
1	0	0	0	1					CUU			
2	0	0	1	0					CUD			
3	0	0	1	1					CUF			
4	0	1	0	0					CUB			
5	0	1	0	1								
6	0	1	1	0								
7	0	1	1	1								
8	1	0	0	0					CUH			
9	1	0	0	1							MC	
10	1	0	1	0					ED			
11	1	0	1	1					EL			
12	1	1	0	0								
13	1	1	0	1								
14	1	1	1	0								
15	1	1	1	1								

NOTE: Special editing function control keys in columns 4 and 6 are not displayable.

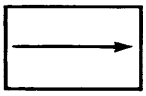
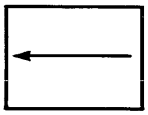
The two-character ESC codes are defined as follows (see also Tables 2 and 3):



Cursor Up (CUU) — Moves cursor up one line. If cursor is present on top line, it wraps around and appears on the bottom line of the display in the same column (wraps around column 81 to 1 or else column 1 to 81). (column/line) 1/11, 4/1 (ESC A)



Cursor Down (CUD) — Moves cursor down one line. If cursor is present on bottom line, it wraps around and appears on the top line of the display in the same column (wraps around column 1 to 81 or else column 81 to 1). 1/11, 4/2 (ESC B)

	Cursor Forward (CUF)	Moves cursor right one character position. Movement does not erase or modify contents of memory display. If cursor was located at end of line, receipt of this code advances cursor forward one position to a phantom (nondisplayable) position. If cursor is located at phantom position, receipt of code causes a cursor wraparound to first position of next line. If cursor is already located on last line of display, it will wrap around to HOME position.	1/11, 4/3 (ESC C)
	Cursor Backward (CUB)	Moves cursor left one character position. Movement does not erase or modify contents of memory display. If cursor was at start of a line (column 1), receipt of this code causes a cursor wraparound to a phantom (nondisplayable) position of previous line. If cursor is located at phantom position, receipt of code causes cursor to appear in column 80. If cursor was at HOME position, receipt of code causes a cursor wraparound to phantom position (column 81) on last line of display.	1/11, 4/4 (ESC D)
HOME	Cursor Home (CUH)	Moves cursor to HOME position, i.e., the first position of the top line (line 1).	1/11, 4/8 (ESC H)
CLR	Clear (RIS)	Reset to Initial State (RIS); clears display screen, moves cursor to HOME position, and sets display function to normal screen intensity.	1/11, 6/0 (ESC ')
ERASE EOP/EOL	Erase – End of Page (ED)	EOP erases all screen data displayed from active cursor position to end of page (EOP is used with SHIFT key).	1/11, 4/10 (ESC J)
	Erase – End of Line (EL)	EOL erases all data displayed from active cursor position to end of line	1/11, 4/11 (ESC K)
XMIT	Transmit (MC)	XMIT key is used to initiate transmission of data from VIP to host system only when VIP is in one of the buffered transmission modes (LINE/PAGE). Data is transmitted from beginning of line or page up to but not including the cursor position.	1/11, 6/9 (ESC i)

Special Control Function Keys – ESC Control Characters

A group of seven nondisplayable special function keys F1 through F7 is provided as part of the standard keyboard. Each key produces an output consisting of a two-character (escape) sequence (see Table 4).

Codes designated as F1 through F7 are produced when the keys are pressed alone (singly). Codes FS1 through FS7 are produced when any of these keys is pressed in combination with the SHIFT key. The CAPS LOCK and CTL (control) keys have no effect on these special function keys. The host system interprets codes received dependent upon application use and initiates necessary actions.

TABLE 4. ESC CONTROL CHARACTERS

				Column	0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
	Bits			B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
Row	B4	B3	B2	B1								
0	0	0	0	0				F1				
1	0	0	0	1				FS1				
2	0	0	1	0				F2				
3	0	0	1	1								
4	0	1	0	0								
5	0	1	0	1				FS2				
6	0	1	1	0				F3				
7	0	1	1	1				FS3				
8	1	0	0	0				F4				
9	1	0	0	1				FS4				
10	1	0	1	0				F5				
11	1	0	1	1		ESC		FS5				
12	1	1	0	0				F6				
13	1	1	0	1				FS6				
14	1	1	1	0				F7				
15	1	1	1	1				FS7				

NOTE: Special function control keys in column 3 are not displayable.

Host Processor Commands/Terminal Response Codes

In addition to the function keys described in the paragraph entitled "Editing Control Function Keys," the following four codes define display enhancement capabilities useful in applications between the host processor and VIP terminal (see Table 5).

HOST PROCESSOR COMMAND (Mnemonic)	TWO-CHARACTER SEQUENCE (Column/Line)	TERMINAL RESPONSE
SHI	1/11, 3/3 (ESC 3)	Set High Intensity – Returns the display of each subsequent character to the higher intensity level on the display screen. This higher intensity level is considered to be the normal intensity level.

SLI	1/11, 3/4 (ESC 4)	Set Low Intensity – A command given to instruct that the displayable characters which follow are to be displayed in the lower intensity "background" form.
RCA	1/11, 6/14 (ESC n Px Py)	Read Cursor Address – Receipt causes the display unit to respond by transmitting the Horizontal and Vertical Position (HVP) code sequence 1/11 6/6 Px Py where Px and Py are the parameter values of the current cursor address in accordance with the coding shown in Table 6.
HVP	FOUR-CHARACTER SEQUENCE 1/11, 6/6, Px, Py (ESC f Px Py)	Horizontal and Vertical Position – Receipt is an instruction to move cursor to the stated address; action is to move the cursor to the active horizontal and vertical position identified by the parameters Px and Py. Coding for the parameter values of Px and Py is shown in Table 6.

TABLE 5. HOST PROCESSOR COMMANDS AND TERMINAL RESPONSE CODES

				Column	0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
	Bits			B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
Row	B4	B3	B2	B1								
0	0	0	0	0								
1	0	0	0	1								
2	0	0	1	0								
3	0	0	1	1				SHI				
4	0	1	0	0				SLI				
5	0	1	0	1								
6	0	1	1	0							HVP	
7	0	1	1	1								
8	1	0	0	0								
9	1	0	0	1								
10	1	0	1	0								
11	1	0	1	1								
12	1	1	0	0								
13	1	1	0	1								
14	1	1	1	0							RCA	
15	1	1	1	1								

NOTE: Special function control keys in columns 3 and 6 are not displayable.

TABLE 6. HORIZONTAL/VERTICAL CODE COORDINATES

				Column	0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
	Bits			B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
Row	B4	B3	B2	B1								
0	0	0	0	0			HOME	17	33	49	65	81
1	0	0	0	1			2	18	34	50	66	
2	0	0	1	0			3	19	35	51	67	
3	0	0	1	1			4	20	36	52	68	
4	0	1	0	0			5	21	37	53	69	
5	0	1	0	1			6	22	38	54	70	
6	0	1	1	0			7	23	39	55	71	
7	0	1	1	1			8	24	40	56	72	
8	1	0	0	0			9	25	41	57	73	
9	1	0	0	1			10	26	42	58	74	
10	1	0	1	0			11	27	43	59	75	
11	1	0	1	1			12	28	44	60	76	
12	1	1	0	0			13	29	45	61	77	
13	1	1	0	1			14	30	46	62	78	
14	1	1	1	0			15	31	47	63	79	
15	1	1	1	1			16	32	48	64	80	

NOTE: Code for horizontal position Px (values 1 to 81);
Code for vertical position Py (values 1 to 24).

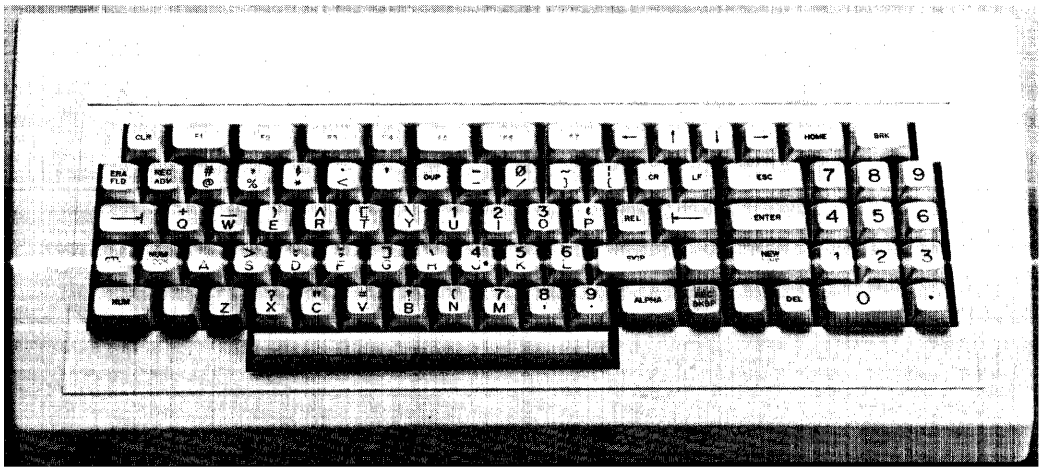


Figure 5. VIP7207 Keyboard Layout

VIP7207 KEYBOARD

The VIP7207 generates the following unique key output code sequences that solicit interpretation and response by the host system software to perform the indicated functions. A complete VIP7207 keyboard output code matrix is included in Appendix E. (The VIP7207 keyboard layout is shown in Figure 5.)

Key	Function	Output Code Sequence
REC ADV	RECORD ADVANCE	ESC L (1B, 4C)
DUP	DUPLICATE	ESC d (1B, 64)
→|	HORIZONTAL TAB HT	HT (09)
REL	RELEASE	ESC b (1B, 62)
|←	BACK TAB	ESC (1B, 67)
ENTER	ENTER	ESC h (1B, 68)
SKIP	SKIP	ESC I (1B, 49)
NEW LINE	NEW LINE	ESC E (1B, 45)
ALPHA	(UPON PRESSING KEY) (UPON RELEASING KEY)	DLE (10) DC1 (11)
REC BKSP	RECORD BACKSPACE	ESC c (1B, 63)

OPERATION

To minimize the possibility of error in terminal use, it is important that the operator understand the functions and use of the controls and keys.

Operation Status

There are two main device states for the VIP terminal: local and online mode. The terminal is in the local mode if it is offline and not connected to the system processor; it is in the online mode when it is connected to the system.

Initial Power-Up and Power-Down Procedures

In the following procedure it is assumed that all electrical cables have been properly connected and secured and that power is applied to the terminal.

To Power Up the Device

1. Set the power switch located at the rear of the device to ON. The POWER ON indicator at the front of the device will light.
2. Set the ONLINE/LOCAL switch to LOCAL and the LOCAL COPY/ECHO switch to LOCAL COPY position.
3. Enter a line or two of data while in the LOCAL mode (offline) and notice the intensity of the screen display. Image intensity can be varied by the BRIGHTNESS control. Rotating the control clockwise intensifies the image; rotating it counter-clockwise causes the image to become less intense.
4. Set the ONLINE/LOCAL switch to the selected mode of operation: ONLINE position for system online operation; LOCAL position for offline operation.
5. Depending on system operation, set the LOCAL COPY/ECHO switch to ECHO.
6. Depending on system operation, set the CHARACTER/BUFFER switch to CHARACTER.
7. Depending on system operation, set the DUPLEX HALF/FULL switch, accordingly.
8. Set the MODEM HI/LO switch to HI.
9. Set the BAUD RATE switch to a position that will correspond to the data rate of the host system with which the terminal is used.

10. Set the STOP BIT switch to either the 1 or 2 position. Selection is determined by the host system data format.

To Power Down the Device

Set the POWER ON/OFF switch to OFF position. The POWER ON indicator will go out.

KEYBOARD CONSIDERATIONS

Six keys on the typewriter keyboard that do not generate or cause a code to be transmitted to the system processor are the SHIFT, CTL, RPT, BRK, END OF MESSAGE, and CAPS LOCK keys. Four keys on the Data Entry Keyboard that do not generate or cause a code to be transmitted to the host processor are CTL, NUM LOCK, NUM, and BRK. This keyboard provides for auto repeat at 12 cps (after a 0.5-second initial delay) for all keys except CLR, Function Keys F1-F7, HOME, BRK, ENTER, CTL, NUM LOCK, SKIP, and NUM. All other keys, when activated, generate a code that is transmitted to the system processor. The processor in turn interprets these codes as information or control data.

Table B-1 describes the functions and characteristics of the ASCII communication control characters shown in Table 2. The DEL (delete) key is used to produce the nondisplayable ASCII code DEL (independent of SHIFT, CAPS LOCK, and CONTROL keys).

The VIP terminal complements the host system convention for interpreting data either in an all uppercase configuration (Teletype-compatible) or in a non-Teletype environment. The CAPS LOCK keyboard feature ensures that capital letters of the alphabet will be transmitted to complement a Teletype environment.

*

Buffered Transmission

For buffered transmission to occur, press the TRANSMIT key and set the CHARACTER/BUFFER switch to the BUFFER position. The LINE/PAGE switch will define the maximum extent of the transmission. Data transmission is always from the beginning of line or page to the current cursor position. A remote transmit command from the host system can cause a buffered transmission from the VIP terminal to the host system regardless of the CHARACTER/BUFFER switch setting, and data transmitted will be that data defined by the LINE/PAGE switch and position of the cursor.

It must be noted that the function codes (F1 through F7) are not stored and are therefore not included in a buffered transmission. Depending on the setting of the internal switches at the time of the VIP installation, a buffered transmission may end with an END OF MESSAGE character that is selected to be either a CR (CARRIAGE RETURN), EXT (END OF TEXT), or an EOT (END OF TRANSMISSION) code.

DISPLAY CONSIDERATIONS

The display responds to character codes received from the communications interface. With the exception of BEL, LF, CR, and NUL, the remaining nondisplayable ASCII communication control characters (see Tables 2 and B-1) are ignored by the display unit and have no effect on the VIP screen.

The VIP terminal is configured to receive as well as to display transmitted data, provided it is acceptable to the operating convention of the host processing system. The terminal response described for received data also applies to the transmitted data. To implement this configuration, however, it becomes necessary for the host system to view the VIP terminal as a non-echoplex operation rather than an echoplex (full-duplex).

When the VIP terminal is configured for LOCAL COPY non-echoplex operation (though transmission is four-wire, full-duplex), the keyboard output is displayed and simultaneously transmitted to the host system. When configured for full-duplex ECHO operation, the host system must echo the keyboard output back to the terminal for it to be displayed.

Cursor Function Operation

The cursor is a reverse video, blinking block that initially appears in the HOME position (first column, top line one of display). As data is keyed in, the cursor indicates the next position into which data may be entered. Any character written in column 80 moves the cursor into a nonexistent column (i.e., outside the data display area). The next character entered causes an automatic CR/LF (CARRIAGE RETURN/LINE FEED) and the character appears in the first column of the next line.

The cursor movement keys (←, ↑, →, and ↓) move the cursor one character space in the direction indicated. The HOME key moves the cursor directly to the home position. When used in conjunction with the repeat (RPT) key, the cursor moves at the rate of 15 character-spaces-per-second until the repeat key is released.

However, upon completion of line 24 the user can set the ROLL/PAGE switch to PAGE to prevent scrolling and loss of line one data.

HOST SYSTEM REQUIREMENTS

In general, the supporting software must be aware of the auxiliary device characteristics since the level of support required may be different from that required by the VIP terminal. For example, when data is sent to a VIP terminal with an unbuffered printer attached as an auxiliary device, a time delay is required following a carriage return/line feed. Also, supporting software must manage any inconsistencies in control characters or functions used by the VIP and auxiliary device. For example, terminal control characters used for cursor forward space, cursor backspace, and clear screen functions may not be compatible with the use of these control characters by the auxiliary device.

PARITY ERROR IN CHARACTER CODES

If a parity error is detected in any received graphic or control character code, this invalid character or function code will be replaced by the seven-bit code 3/15 in the display's memory, and the error is indicated on the display screen by the graphic ? (see Table 2).

Parity error in multicharacter control functions can result in several different conditions. If the error occurs in the first character (the ESC code), it is replaced by the ? and the following characters interpreted independently and displayed accordingly. Should an error occur in the second character, the two-character sequence is aborted and replaced by the ? character. In the HVP four-character sequence, an error in the third character will cause an abort and display of a ? with the fourth character displayed as a graphic. An error in the fourth character will cause a ? to be displayed at the new Px position, as a result of valid reception and interpretation of the first three characters.

OPERATOR MAINTENANCE

The operator must perform preventive maintenance to ensure the proper operation of the VIP7200/7205/7207 terminal. Preventive maintenance includes the checks and cleaning performed on a scheduled basis, even though VIP operation may be satisfactory and not require attention. Preventive maintenance keeps the terminal and its components in the best operating condition at all times, reducing the chance of "downtime" and the need for further maintenance by Honeywell Field Engineering.

Field Engineering must be consulted to determine VIP failure should a fault exist within the terminal. However, prior to calling Field Engineering, the operator should first determine if a fault actually exists. In many cases, the system or the VIP terminal is operating normally; the fault is in the way that the terminal is used. It is therefore important to be aware at all times of the VIP terminal's capabilities and those of the host system with which the terminal is being used.

Operator Responsibilities

The operator is expected to note and record operating details of the VIP, especially those that deviate in any way from normal operation, and inform the assigned maintenance staff of any major deviations from normal operation.

A maintenance log is recommended. The log should record routine cleaning chores, log device faults with their symptoms, as well as any corrective maintenance performed by Field Engineering personnel. The terminal has no error indicators as such; any malfunctions will be exhibited in such ways as a loss of displayed data or improper response to keyboard inputs. This information is extremely helpful to Field Engineering for faults that tend to be intermittent problems.

For all maintenance, the VIP terminal must be powered down and the prescribed procedures followed.

Cleaning and Checking the VIP Terminal

The VIP terminal should be cleaned weekly or more often as use dictates.

1. Power down the VIP according to procedures.
2. Remove all dust and dirt from the outside of the terminal with a vacuum cleaner or a low pressure air hose.
3. Wipe the display screen clean with a lint-free cloth.
4. Dampen a lint-free cloth in a Honeywell solvent (General Cleaner, Order No. 373652) or equivalent and clean the keyboard.
5. Check the condition of the fuse on the terminal.
6. Check the tightness of all cable connections to the terminal.

With power applied (POWER ON) to the VIP terminal perform a keyboard character check:

1. Set the ONLINE/LOCAL switch to LOCAL and the LOCAL COPY-ECHO switch to LOCAL COPY.
2. Check for proper operation and response of each key struck on the keyboard by observing the results shown on the display screen.
3. If the results are unsatisfactory, call Honeywell Field Engineering.

Appendix A
VIP Internal Switches

The VIP terminal's internal switches allow a Honeywell Field Service Engineer to configure the terminal to user requirements. These switches are intended for Field Service use only and are normally set at the factory or at the terminal site by Field Engineering personnel. The switches are located within the terminal and are inaccessible to the operator. The function of each switch is described as follows:

Switch: PARITY INHIBIT/PARITY ENABLE
Function: In PARITY INHIBIT position, terminal is configured to send characters containing bits as defined by MARK/SPACE switch. In PARITY ENABLE position, terminal is configured to send and check characters for the correct parity bit value.

Switch: EVEN PARITY/ODD PARITY
Function: When PARITY ENABLE is selected, this switch allows selection of either even or odd parity.

Switch: CURRENT LOOP/EIA
Function: Configures terminal interface to the host for either current loop or EIA-type communications.

Switch: 20MA/60MA
Function: When current loop interface is used, configures terminal for either 20- or 60-mA current flow.

Switch: 50HZ/60HZ
Function: Selects display refresh rate to correspond with the line frequency.

Switch: MARK/SPACE
Function: Specifies the value of the character parity position when the Parity Inhibit option has been selected. MARK is equal to a bit and SPACE is equal to a no-bit value.

Switch: AUDIBLE ALARM
Function: Enables or inhibits end-of-line warning. Does not affect sounding of alarm by the BEL code.

Switch: END OF MSG
Function: Selects CR, ETX, or EOT as the ending character for block mode transmissions by establishing the first four bits of character.

Switch: LOWERCASE (Display)
Function: When enabled, the lowercase alphabet will be displayed if terminal is equipped with this option (VIP7205). When disabled, lowercase characters are displayed as uppercase alphabet.

Switch: RATE/ENABLE
Function: When set to ENABLE, it allows selection of the MODEM SPEED HI-LO connection. When disabled, it has no function.

Switch: BLINK
Function: When enabled, causes characters or fields preceded by set low intensity command to vary from low to high intensity giving a blink appearance.

Appendix B

ASCII Communication Control Characters

TABLE B-1. ASCII COMMUNICATION CONTROL CHARACTERS

Communication Control Character	Press CTL and Designated Key	Definition	Conventional Use (Not Specific to VIP7200)
NUL	@	Nul	Functions as a filler character
SOH	A	Start of Header	Considered as first character of transmission in some software conventions
STX	B	Start of Text	Considered as first character of a message or block in some software conventions
ETX	C	End of Text	Identifies the end of a message or a block
EOT	D	End of Transmission	Indicates the last character to be transmitted
ENQ	E	Enquiry	Questions communication status of terminal at other end of link
ACK	F	Acknowledge	Acknowledges proper reception of transmitted data
BEL[a]	G	Bell	Causes an alarm to sound
BS	H	Backspace	Positions data (display or keyboard) one position back
HT[a]	I	Horizontal Tab	Sets tab on a horizontal plane
LF[a]	J	Line Feed	Scrolls a display or teleprinter one row
VT	K	Vertical Tab	Sets tab on a vertical plane
FF	L	Form Feed	Clears the display area and brings cursor to the home position column 1 (line 1)
CR[a]	M	Carriage Return	Gains access to column 1. Moves cursor to column 1
SO	N	Shift Out	Changes the meaning of the characters
SI	O	Shift In	Changes the meaning of the characters
DLE[a]	P	Data Link Escape	Used in some software conventions to indicate a change in convention
DC1[a]	Q	Device Control 1	Controls an auxiliary device on the terminal
DC2	R	Device Control 2	Controls an auxiliary device on the terminal
DC3	S	Device Control 3	Controls an auxiliary device on the terminal
DC4	T	Device Control 4	Controls an auxiliary device on the terminal
NAK	U	Negative Acknowledge	Indicates that the message was received incorrectly
SYN	V	Synchronous Idle	Used to arrive at synchronization between sender and receiver or to keep line open
ETB	W	End of Transmission Block	Indicates end of block but not end of transmission
CAN	X	Cancel	Cancels previous transmission

TABLE B-1 (CONT). ASCII COMMUNICATION CONTROL CHARACTERS

Communication Control Center	Press CTL and Designated Key	Definition	Conventional Use (Not Specific to VIP7200)
EM	Y	End of Medium	Indicates end of media or data to be transmitted
SUB	Z	Substitute	Used when a character parity error is detected
ESC	[	Escape	Normally used with another character indicates a change
FS	\	File Separator	Indicates a change in files.
GS	]	Group Separator	Indicates a change of a group of messages, files, records, etc.
RS	^	Record Separator	Indicates a change in record or message.
US	_	Unit Separator	Separates a group of characters as in part of a message.

[a]These codes will have a decided effect on the VIP7200/7205/7207 terminals. Remaining codes depend on the introduction of software conventions for reaction.

Appendix C

ESC Control Characters

TABLE C-1. ESC CONTROL CHARACTER SUMMARY

				Column	0	1	2	3	4	5	6	7
				B7→	0	0	0	0	1	1	1	1
	Bits			B6→	0	0	1	1	0	0	1	1
				B5→	0	1	0	1	0	1	0	1
Row	B4	B3	B2	B1								
0	0	0	0	0		ALPHA		F1			CLR/RIS	
1	0	0	0	1		ALPHA		FS1	CUU		(RESV)	
2	0	0	1	0				F2	CUD		REL	
3	0	0	1	1				SHI	CUF		REL BKSP	
4	0	1	0	0				SLI	CUB		DUP	
5	0	1	0	1				FS2	NEW LINE			
6	0	1	1	0				F3			HVP	
7	0	1	1	1	BEL			FS3			BKTAB	
8	1	0	0	0				F4	CUH		ENTER	
9	1	0	0	1	HT			FS4	SKIP		MC	
10	1	0	1	0	LF			F5	ED			
11	1	0	1	1		ESC		FS5	EL			
12	1	1	0	0				F6	REC ADV		(RESV)	
13	1	1	0	1	CR			FS6			(RESV)	
14	1	1	1	0				F7			RCA	
15	1	1	1	1				FS7				

NOTE: All function keys indicated are not displayable. Control Characters identified in Columns 0 and 1 are not ESC Control Characters, but are included for clarity in this summary.

Appendix D
Programming Aids

TABLE D-1. HEXADECIMAL-ASCII-EBCDIC INTERPOLATION

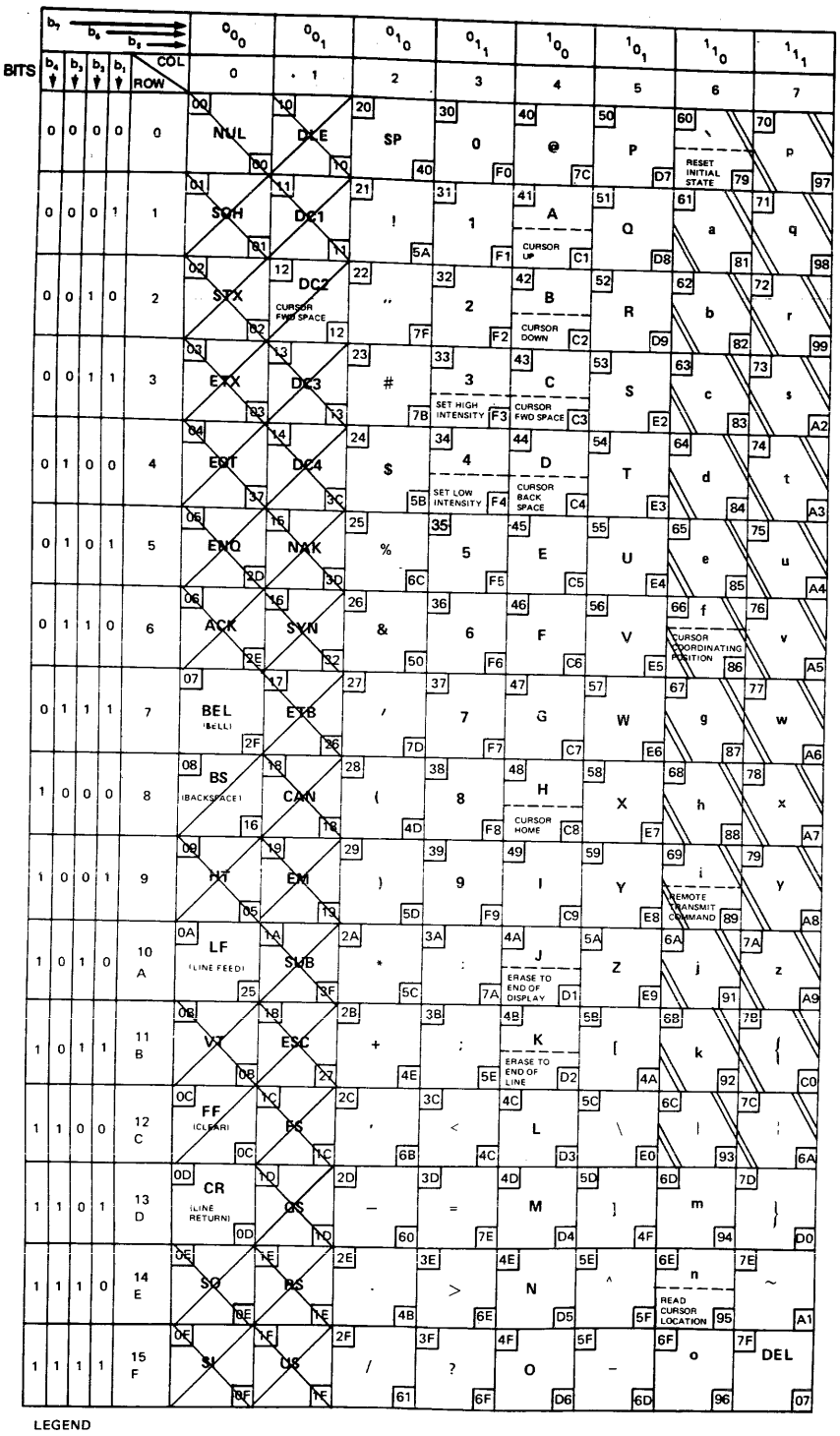
Horizontal (Px) and Vertical (Py) cursor
Px (value 1-81) Positioning Codes Py (value 1-24)
ESC f Px Py

Decimal	Octal	ASCII Hex	EBCDIC Hex	Decimal	Decimal	Octal	ASCII Hex	EBCDIC Hex	Decimal
1	40	20	40	1	34	101	41	C1	34
2	41	21	5A	2	35	102	42	C2	35
3	42	22	7F	3	36	103	43	C3	36
4	43	23	7B	4	37	104	44	C4	37
5	44	24	5B	5	38	105	45	C5	38
6	45	25	6C	6	39	106	46	C6	39
7	46	26	50	7	40	107	47	C7	40
8	47	27	7D	8	41	110	48	C8	41
9	50	28	4D	9	42	111	49	C9	42
10	51	29	5D	10	43	112	4A	D1	43
11	52	2A	5C	11	44	113	4B	D2	44
12	53	2B	4E	12	45	114	4C	D3	45
13	54	2C	6B	13	46	115	4D	D4	46
14	55	2D	60	14	47	116	4E	D5	47
15	56	2E	4B	15	48	117	4F	D6	48
16	57	2F	61	16	49	120	50	D7	49
17	60	30	F0	17	50	121	51	D8	50
18	61	31	F1	18	51	122	52	D9	51
19	62	32	F2	19	52	123	53	E2	52
20	63	33	F3	20	53	124	54	E3	53
21	64	34	F4	21	54	125	55	E4	54
22	65	35	F5	22	55	126	56	E5	55
23	66	36	F6	23	56	127	57	E6	56
24	67	37	F7	24	57	130	58	E7	57
25	70	38	F8	25	58	131	59	E8	58
26	71	39	F9	26	59	132	5A	E9	59
27	72	3A	7A	27	60	133	5B	4A	60
28	73	3B	5E	28	61	134	5C	E0	61
29	74	3C	4C	29	62	135	5D	4F	62
30	75	3D	7E	30	63	136	5E	5F	63
31	76	3E	6E	31	64	137	5F	6D	64
32	77	3F	6F	32	65	140	60	79	65
33	100	40	7C	33	66	141	61	81	66

TABLE D-1 (CONT). HEXADECIMAL-ASCII-EBCDIC INTERPOLATION

Decimal	Octal	ASCII Hex	EBCDIC Hex	Decimal
67	142	62	82	67
68	143	63	83	68
69	144	64	84	69
70	145	65	85	70
71	146	66	86	71
72	147	67	87	72
73	150	68	88	73
74	151	69	89	74
75	152	6A	91	75
76	153	6B	92	76
77	154	6C	93	77
78	155	6D	94	78
79	156	6E	95	79
80	157	6F	96	80

TABLE D-2. VIP CHARACTER SET REPRESENTATION (HEXADECIMAL-ASCII-EBCDIC)



LEGEND

Upper left is Hexadecimal for ASCII code
Lower right is Hexadecimal for EBCIDIC equivalent

Codes not recognized by the VIP 7100 or VIP 7200 when received are ignored

Codes not recognized by the VIP 7100 when received are ignored

Codes not recognized by the VIP 7200 when received are ignored

Codes when used as the second character of 2 two character sequence preceded by the ESC code will also have the command meaning indicated for the VIP 7200

Codes when received by the VIP 7100 or VIP7200 are displayed as their upper case equivalent if the lower case display is not enabled.

Appendix E
VIP7207/Keyboard Character Output Code Matrix and Command Generation

TABLE E-1. VIP7207 KEYBOARD CHARACTER OUTPUT CODE MATRIX

Key Location	Key Legend	Non-numeric	Numeric/Numeric Lock	Control
1	CLR	ESC `(1B,60)	ESC `(1B,60)	ESC `(1B,60)
2	F1	ESC0(1B,30)	ESC1(1B,31)	ESC0(1B,30)
3	F2	ESC2(1B,32)	ESC5(1B,35)	ESC2(1B,32)
4	F3	ESC6(1B,36)	ESC7(1B,37)	ESC6(1B,36)
5	F4	ESC8(1B,38)	ESC9(1B,39)	ESC8(1B,38)
6	F5	ESC:(1B,3A)	ESC;(1B,3B)	ESC:(1B,3A)
7	F6	ESC<(1B,3C)	ESC=(1B,3D)	ESC<(1B,3C)
8	F7	ESC>(1B,3E)	ESC?(1B,3F)	ESC>(1B,3E)
9	←	ESCD(1B,44)	ESCD(1B,44)	ESCD(1B,44)
10	↑	ESCA(1B,41)	ESCA(1B,41)	ESCA(1B,41)
11	↓	ESCB(1B,42)	ESCB(1B,42)	ESCB(1B,42)
12	→	ESCC(1B,43)	ESCC(1B,43)	ESCC(1B,43)
13	HOME	ESCH(1B,48)	ESCH(1B,48)	ESCH(1B,48)
14	BRK	–	–	–
15	ERA FLD	ESCK(1B,4B)	ESCJ(1B,4A)	ESCK(1B,4B)
16	REC ADV	ESCL(1B,4C)	ESCL(1B,4C)	ESCL(1B,4C)
17	# @	@(40)	#(23)	NUL(00)
18	? %	%(25)	,(2C)	%(25)
19	$ *	*(2A)	$(24)	*(2A)
20	. <	<(3C)	.(2E)	<(3C)
21	/	ESCa(1B,61)	▾(27)	ESCa(1B,61)
22	DUP	ESCd(1B,64)	ESCd(1B,64)	ESCd(1B,64)
23	– –	–(2D)	–(2D)	US(1F)
24	0 /	/(2F)	0(30)	/(2F)
25	~ }	} (7D)	~(7E)	} (7D)
26	¦ {	{ (7B)	¦(7C)	{ (7D)
27	CR	CR(OD)	CR(0D)	CR(0D)
28	LF	LF(0A)	LF(0A)	LF(0A)
29	ESC	ESC(1B)	ESC(1B)	ESC(1B)
30	7	7(37)	7(37)	7(37)

TABLE E-1 (CONT). VIP7207 KEYBOARD CHARACTER OUTPUT CODE MATRIX

Key Location	Key Legend	Non-numeric	Numeric/Numeric Lock	Control
31	8	8(38)	8(38)	8(38)
32	9	9(39)	9(39)	9(39)
33	→|	HT(09)	HT(09)	HT(09)
34	+			
	Q	Q(51)	+(2B)	NO OUTPUT (Q Key)
35	-			
	W	W(57)	–(5F)	ETB(17)
36	)			
	E	E(45)	)(29)	ENQ(05)
37	^			
	R	R(52)	^ (5E)	DC2 (Note 1)(12)
38	[			
	T	T(54)	[(5B)	DC4(Note 1)(14)
39	\			
	Y	Y(59)	\(5C)	EM(Note 1)(19)
40	/			
	U	U(55)	/(31)	NAK(15)
41	2			
	I	I(49)	2(32)	HT(09)
42	3			
	0	0(4F)	3(33)	SI(0F)
43	&			
	P	P(50)	&(26)	NO OUTPUT (P Key)
44	REL	ESCb(1B,62)	ESCb(1B,62)	ESCb(1B,62)
45	|←	ESCg(1B,67)	ESCg(1B,67)	ESCg(1B,67)
46	ENTER	ESCh(1B,68)	ESCh(1B,68)	ESCh(1B,68)
47	4	4(34)	4(34)	4(34)
48	5	5(35)	5(35)	5(35)
49	6	6(36)	6(36)	6(36)
50	CTL	LOCAL FCN	LOCAL FCN	LOCAL FCN
51	NUM			
	LOCK	LOCAL FCN	LOCAL FCN	LOCAL FCN
52	A	A(41)	A(41)	SOH(01)
53	>			
	S	S(53)	>(3E)	DC3(13)
54	:			
	D	D(44)	:(3A)	EOT(04)
55	;			
	F	F(46)	;(3B)	ACK(06)
56	]			
	G	G(47)	](5D)	Bell(Note 1)(07)
57	`			
	H	H(48)	`60	BS(08)
58	4			
	J	J(4A)	4(34)	LF(0A)
59	5			
	K	K(4B)	5(35)	VT(0B)
60	6			
	L	L(4C)	6(36)	FF(0C)

TABLE E-1 (CONT). VIP7207 KEYBOARD CHARACTER OUTPUT CODE MATRIX

Key Location	Key Legend	Non-numeric	Numeric/Numeric Lock	Control
61	SKIP	ESCI(1B,49)	ESCI(1B,49)	ESCI(1B,49)
62	not assigned	ESCk(1B,6B)	ESCk(1B,6B)	ESCk(1B,6B)
63	NEW LINE	ESCE(1B,45)	ESCE(1B,45)	ESCE(1B,45)
64	1	1(31)	1(31)	1(31)
65	2	2(32)	2(32)	2(32)
66	3	3(33)	3(33)	3(33)
67	NUM	LOCAL FCN	LOCAL FCN	LOCAL FCN
68	not assigned	ESCl(1B,6C)	ESCl(1B,6C)	ESCl(1B,6C)
69	Z	Z(5A)	Z(5A)	SUB(1A)
70	? X	X(58)	?(3F)	CAN(18)
71	| | C	C(43)	||(22)	EXT(03)
72	= V	V(56)	=(3D)	SYN(16)
73	! B	B(42)	!(21)	STX(02)
74	(N	N(4E)	C(28)	SO(0E)
75	7 M	M(4D)	7(37)	CR(0D)
76	8 ,	,(2C)	8(38)	,(2C)
77	9 .	.(2E)	9(39)	.(2E)
78*	ALPHA	DLE(10)	DLE(10)	DLE(10)
78**	ALPHA	DC1(11)	DC1(11)	DC1(11)
79	REC BKSP	ESCc(1B,63)	ESCc(1B,63)	ESCc(1B,63)
80	not assigned	ESCm(1B,6D)	ESCm(1B,6D)	ESCm(1B,6D)
81	DEL	DEL(7F)	DEL(7F)	DEL(7F)
82	0	0(30)	0(30)	0(30)
83	.	.(2E)	.(2E)	.(2E)
84	SPACE	SPACE(20)	SPACE(20)	SPACE(20)

*CODE UPON DEPRESSION
**CODE UPON RELEASE

Control code overrides all non-numeric and numeric lock codes except for the following four keys:

Key #	Control w/Numeric or Numeric Lock
37	RS(1E) Record Separator
38	ESC(1B) Escape
39	FS(1C) Field Separator
56	GS(1D) Group Separator

TABLE E-2. VIP7207 COMMAND GENERATION

VIP7207 Command	ASCII	Remarks
Set High Intensity SHI	ESC3	Two key operation ESC key + 3 key
Set Low Intensity SLI	ESC4	Two key operation ESC key + 4 key
Horizontal/Vertical Position Cursor HVP	ESCf__	Cannot be generated from VIP7207
Read Cursor Address RCA	ESCn	Data entry keyboard because no lowercase alphabet
(Remote) Transmit	ESCi	

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