

# VT 240 Series

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Programmer Pocket Guide

**digital**

# VT 240 Series

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## Programmer Pocket Guide

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# CONTENTS

Character Encoding .....	2
7-Bit Code .....	2
7-Bit ASCII Code Table .....	2
8-Bit Code .....	3
8-Bit Code Table .....	3
DEC Multinational Character Set (C0 and GL) .....	4
DEC Multinational Character Set (C1 and GR) .....	5
UK National Character Set .....	6
DEC Special Graphics .....	7
Display Controls Font .....	8
Escape Sequences .....	10
Control Sequences .....	10
Device Control Strings .....	10
Transmitted Codes .....	10
Main Keypad Function Keys .....	10
Editing Keys .....	11
Cursor Control Keys .....	11
Auxiliary Keypad Keys .....	12
Top Row Function Keys .....	13
Keys Used to Generate 7-Bit Control Characters .....	14
Received Codes .....	15
Compatibility Level (DECSCSL) .....	15
C0 (ASCII) Control Character Recognized .....	15
C1 Control Characters Recognized .....	17
Character Set Selection (SCS) .....	18
Designating "Hard" Character Sets .....	18
Designating "Soft" Character Sets .....	19
Invoking Character Sets Using Lock Shifts .....	19
Invoking Character Sets Using Single Shifts .....	20
Select C1 Control Transmission .....	20
Terminal Modes .....	21
Cursor Positioning .....	22
Tab Stops .....	24
Select Graphic Rendition (SGR) .....	24
Select Character Attributes (DECSCA) .....	25
Line Attributes .....	25
Editing .....	26
Erasing .....	26
Set Top and Bottom Margins (DECSTBM) .....	27
Printing .....	28

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User Defined Keys (DECUDK) .....	29
Down-Line Loading Characters (DRCS) .....	30
DECDDL Parameter Characters .....	30
Clearing a Down-Line Loaded Character Set .....	31
Reports .....	32
Device Attributes (DA) .....	32
Device Status Report (DSR) .....	33
DSR - Printer Port .....	33
DSR - User Defined Keys (VT200 mode only) .....	34
Identification (DECID) .....	34
ReGIS Graphics Protocol Controls Mode .....	34
Terminal Reset .....	35
Tests (DECTST) .....	35
Adjustments (DECALN) .....	35
VT52 Escape Sequences .....	36
ReGIS .....	37
ReGIS Command Summary .....	37
ReGIS Power On/Reset Default Values Summary .....	38
Screen Control Command Summary .....	40
Position Command Summary .....	42
Write Control Command Summary .....	42
Vector Commands Summary .....	44
Curve Commands Summary .....	45
Text Command Summary .....	46
Load Command Summary .....	49
Macrograph Summary .....	49
Report Command Summary .....	50
Report Command Error Condition Option Responses .....	50
4010/4014 .....	51
Entering/Exiting 4010/4014 Mode .....	51
Alpha Mode Summary .....	51
Graph and Point Plot Mode Summary .....	52
Incremental Plot Mode .....	55
Gin Mode .....	56
Bypass Condition .....	56

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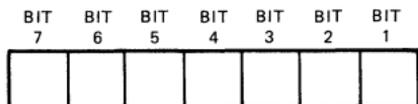
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This Pocket Guide provides a summary of the information contained in the VT240 Programmer's Reference Manual EK-VT240-RM which can be ordered from DIGITAL. It is provided for use by people with a knowledge of computer programming to access the VT240 features.

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# CHARACTER ENCODING

## 7-Bit Code



(DECIMAL VALUE IS COLUMN IN CODE TABLE)

(DECIMAL VALUE IS ROW IN CODE TABLE)

MA-0890-83

## 7-Bit ASCII Code Table

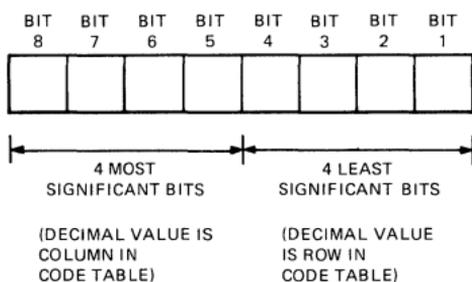
ROW	COLUMNS				COLUMNS				COLUMNS				COLUMNS				
	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	
0	0 0 0 0	NUL	0 0 0 0	DLE	20 16 10 10	SP	40 32 20 20	0	60 48 30 30	@	100 64 40 40	P	120 80 60 60	,	140 96 80 80	p	160 112 70 70
1	0 0 0 1	SOH	1 1 1 1	DC1 (XON)	21 17 11 11	!	41 33 21 21	1	61 49 31 31	A	101 65 41 41	Q	121 81 61 61	a	141 97 81 81	q	161 113 71 71
2	0 0 1 0	STX	2 2 2 2	DC2	22 18 12 12	"	42 34 22 22	2	62 50 32 32	B	102 66 42 42	R	122 82 62 62	b	142 98 82 82	r	162 114 72 72
3	0 0 1 1	ETX	3 3 3 3	DC3 (XOFF)	23 19 13 13	#	43 35 23 23	3	63 51 33 33	C	103 67 43 43	S	123 83 63 63	c	143 99 83 83	s	163 115 73 73
4	0 1 0 0	EOT	4 4 4 4	DC4	24 20 14 14	\$	44 36 24 24	4	64 52 34 34	D	104 68 44 44	T	124 84 64 64	d	144 100 84 84	t	164 116 74 74
5	0 1 0 1	ENQ	5 5 5 5	NAK	25 21 15 15	%	45 37 25 25	5	65 53 35 35	E	105 69 45 45	U	125 85 65 65	e	145 101 85 85	u	165 117 75 75
6	0 1 1 0	ACK	6 6 6 6	SYN	26 22 16 16	&	46 38 26 26	6	66 54 36 36	F	106 70 46 46	V	126 86 66 66	f	146 102 86 86	v	166 118 76 76
7	0 1 1 1	BEL	7 7 7 7	ETB	27 23 17 17	'	47 39 27 27	7	67 55 37 37	G	107 71 47 47	W	127 87 67 67	g	147 103 87 87	w	167 119 77 77
8	1 0 0 0	BS	8 8 8 8	CAN	30 24 18 18	(	50 40 28 28	8	70 56 38 38	H	110 72 48 48	X	130 88 68 68	h	150 104 88 88	x	170 120 78 78
9	1 0 0 1	HT	9 9 9 9	EM	31 25 19 19	)	51 41 29 29	9	71 57 39 39	I	111 73 49 49	Y	131 89 69 69	i	151 105 89 89	y	171 121 79 79
10	1 0 1 0	LF	10 10 10 10	SUB	32 26 20 20	*	52 42 30 30	:	72 58 40 40	J	112 74 50 50	Z	132 90 70 70	j	152 106 90 90	z	172 122 79 79
11	1 0 1 1	VT	11 11 11 11	ESC	33 27 21 21	+	53 43 31 31	;	73 59 41 41	K	113 75 51 51	[	133 91 71 71	k	153 107 91 91	{	173 123 79 79
12	1 1 0 0	FF	12 12 12 12	FS	34 28 22 22	,	54 44 32 32	<	74 60 42 42	L	114 76 52 52	\	134 92 72 72	l	154 108 92 92		174 124 79 79
13	1 1 0 1	CR	13 13 13 13	GS	35 29 23 23	-	55 45 33 33	=	75 61 43 43	M	115 77 53 53	]	135 93 73 73	m	155 109 93 93	}	175 125 79 79
14	1 1 1 0	SO	14 14 14 14	RS	36 30 24 24	.	56 46 34 34	>	76 62 44 44	N	116 78 54 54	^	136 94 74 74	n	156 110 94 94	~	176 126 79 79
15	1 1 1 1	SI	15 15 15 15	US	37 31 25 25	/	57 47 35 35	?	77 63 45 45	O	117 79 55 55	_	137 95 75 75	o	157 111 95 95	DEL	177 127 79 79

### KEY

CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		18	HEX

MA-0893A-83

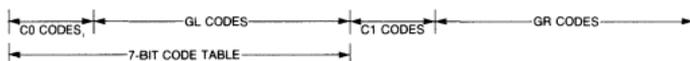
## 8-Bit Code



MA-0891-83

## 8-Bit Code Table

COLUMN ROW	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
00	NUL	DLE	SP							DCS	///					
01	SOH	DC1								PU1						
02	STX	DC2								PU2						
03	ETX	DC3								STS						
04	EOT	DC4							IND	CCH						
05	ENQ	NAK							NEL	MW						
06	ACK	SYN							SSA	SPA						
07	BEL	ETB							ESA	EPA						
08	BS	CAN							HTS							
09	HT	EM							HTJ							
10	LF	SUB							VTS							
11	VT	ESC							PLD	CSI						
12	FF	FS							PLU	ST						
13	CR	GS							RI	OSC						
14	SO	RS							SS2	PM						
15	SI	US						DEL	SS3	APC						///



MA-0892-83

## DEC Multinational Character Set (C0 and GL Codes)

ROW	C0 CODES				GL CODES (ASCII GRAPHICS)												
	BITS				0	1	2	3	4	5	6	7					
	b8	b7	b6	b5	0	0	0	0	0	0	0	0	0	0	0	0	0
	b4	b3	b2	b1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	NUL	DLE	SP	0	@	P	\	p					
1	0	0	0	1	SOH	DC1 (XON)	!	1	A	Q	a	q					
2	0	0	1	0	STX	DC2	"	2	B	R	b	r					
3	0	0	1	1	ETX	DC3 (XOFF)	#	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					

← C0 CODES → GL CODES (ASCII GRAPHICS) →

## KEY

CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX

## DEC Multinational Character Set (C1 and GR Codes)

8	9	10	11	12	13	14	15	COLUMN	ROW			
1 0 0 0    1 0 0 1    1 0 1 0    1 0 1 1    1 1 0 0    1 1 0 1    1 1 1 1								b6 b7	b5 b4 b3 b2 b1			
200 128 80	<b>DCS</b>	220 144 90	240 160 A0	°	260 176 80	À	300 192 C0	320 208 D0	340 224 E0	360 240 F0	0 0 0 0	<b>0</b>
201 129 81	<b>PU1</b>	221 145 91	241 161 A1	±	261 177 81	Á	301 193 C1	321 209 D1	341 225 E1	361 241 F1	0 0 0 1	<b>1</b>
202 130 82	<b>PU2</b>	222 146 92	242 162 A2	2	262 178 82	Â	302 194 C2	322 210 D2	342 226 E2	362 242 F2	0 0 1 0	<b>2</b>
203 131 83	<b>STS</b>	223 147 93	243 163 A3	3	263 179 83	Ã	303 195 C3	323 211 D3	343 227 E3	363 243 F3	0 0 1 1	<b>3</b>
<b>IND</b>	<b>CCH</b>	224 148 94	244 164 A4		264 180 84	Ä	304 196 C4	324 212 D4	344 228 E4	364 244 F4	0 1 0 0	<b>4</b>
<b>NEL</b>	<b>MW</b>	225 149 95	245 165 A5	µ	265 181 85	Å	305 197 C5	325 213 D5	345 229 E5	365 245 F5	0 1 0 1	<b>5</b>
<b>SSA</b>	<b>SPA</b>	226 150 96	246 166 A6	¶	266 182 86	Æ	306 198 C6	326 214 D6	346 230 E6	366 246 F6	0 1 1 0	<b>6</b>
<b>ESA</b>	<b>EPA</b>	227 151 97	247 167 A7	·	267 183 87	Ç	307 199 C7	327 215 D7	347 231 E7	367 247 F7	0 1 1 1	<b>7</b>
<b>HTS</b>		230 152 98	250 168 A8	œ	270 184 88	È	310 200 C8	330 216 D8	350 232 E8	370 248 F8	1 0 0 0	<b>8</b>
<b>HTJ</b>		231 153 99	251 169 A9	1	271 185 89	É	311 201 C9	331 217 D9	351 233 E9	371 249 F9	1 0 0 1	<b>9</b>
<b>VTS</b>		232 154 9A	252 170 AA	ø	272 186 8A	Ê	312 202 CA	332 218 DA	352 234 EA	372 250 FA	1 0 1 0	<b>10</b>
<b>PLD</b>	<b>CSI</b>	233 155 9B	253 171 AB	»	273 187 8B	Ë	313 203 CB	333 219 DB	353 235 EB	373 251 FB	1 0 1 1	<b>11</b>
<b>PLU</b>	<b>ST</b>	234 156 9C	254 172 AC	¼	274 188 8C	Ì	314 204 CC	334 220 DC	354 236 EC	374 252 FC	1 1 0 0	<b>12</b>
<b>RI</b>	<b>OSC</b>	235 157 9D	255 173 AD	½	275 189 8D	Í	315 205 CD	335 221 DD	355 237 ED	375 253 FD	1 1 0 1	<b>13</b>
<b>SS2</b>	<b>PM</b>	236 158 9E	256 174 AE		276 190 8E	Î	316 206 CE	336 222 DE	356 238 EE	376 254 FE	1 1 1 0	<b>14</b>
<b>SS3</b>	<b>APC</b>	237 159 9F	257 175 AF	¿	277 191 8F	Ï	317 207 CF	337 223 DF	357 239 EF	377 255 FF	1 1 1 1	<b>15</b>



### UK National Character Set

ROW	COLUMN							
	0	1	2	3	4	5	6	7
	BITS b8 b7 b6 b5 b4 b3 b2 b1							
	0 0 0 0	0 0 0 1	0 0 1 0	0 0 1 1	0 1 0 0	0 1 0 1	0 1 1 0	0 1 1 1
0	0 0 0 0 NUL	0 0 0 0 DLE	20 16 10 SP	40 32 20 O	60 48 30 @	100 84 40 P	120 80 50 '	140 96 60 p
1	0 0 0 1 SOH	1 1 1 1 DC1 (XON)	21 17 11 !	41 33 21 1	61 49 31 A	101 85 41 Q	121 81 51 a	141 97 61 q
2	0 0 1 0 STX	2 2 2 2 DC2	22 18 12 "	42 34 22 2	62 50 32 B	102 86 42 R	122 82 52 b	142 98 62 r
3	0 0 1 1 ETX	3 3 3 3 DC3 (XOFF)	23 19 13 £	43 35 23 3	63 51 33 C	103 87 43 S	123 83 53 c	143 99 63 s
4	0 1 0 0 EOT	4 4 4 4 DC4	24 20 14 \$	44 36 24 4	64 52 34 D	104 88 44 T	124 84 54 d	144 100 64 t
5	0 1 0 1 ENQ	5 5 5 5 NAK	25 21 15 %	45 37 25 5	65 53 35 E	105 89 45 U	125 85 55 e	145 101 65 u
6	0 1 1 0 ACK	6 6 6 6 SYN	26 22 16 &	46 38 26 6	66 54 36 F	106 90 46 V	126 86 56 f	146 102 66 v
7	0 1 1 1 BEL	7 7 7 7 ETB	27 23 17 ,	47 39 27 7	67 55 37 G	107 91 47 W	127 87 57 g	147 103 67 w
8	1 0 0 0 BS	8 8 8 8 CAN	30 24 18 (	50 40 28 8	70 56 38 H	110 72 48 X	130 88 58 h	150 104 68 x
9	1 0 0 1 HT	11 9 25 9 EM	31 27 19 )	51 41 29 9	71 57 39 I	111 73 49 Y	131 89 59 i	151 105 69 y
10	1 0 1 0 LF	12 10 10 A SUB	32 26 1A 2A *	52 42 2A :	72 58 3A J	112 74 4A Z	132 90 5A j	152 106 6A z
11	1 0 1 1 VT	13 11 B ESC	33 27 1B +	53 43 2B ;	73 59 3B K	113 75 4B [	133 91 5B k	153 107 6B {
12	1 1 0 0 FF	14 12 C FS	34 28 1C ,	54 44 2C <	74 60 3C L	114 76 4C \	134 92 5C l	154 108 6C 
13	1 1 0 1 CR	15 13 D GS	35 29 1D -	55 45 2D =	75 61 3D M	115 77 4D ]	135 93 5D m	155 109 6D }
14	1 1 1 0 SO	16 14 E RS	36 30 1E .	56 46 2E >	76 62 3E N	116 78 4E ^	136 94 5E n	156 110 6E ~
15	1 1 1 1 SI	17 15 F US	37 31 1F /	57 47 2F ?	77 63 3F O	117 79 4F _	137 95 5F o	157 111 6F DEL

**KEY**

CHARACTER	ESC	33 27 1B	OCTAL DECIMAL HEX
-----------	-----	----------------	-------------------------

## DEC Special Graphics

ROW	BITS									
	87	86	85					84	83	82
COLUMN	0	1	2	3	4	5	6	7		
0	0 0 0 0	NUL	DLE	SP	0	@	P	↑	-	160
1	0 0 0 1	SOH	DC1 (XON)	!	1	A	Q	■	-	161
2	0 0 1 0	STX	DC2	"	2	B	R	⌘	-	162
3	0 0 1 1	ETX	DC3 (XOFF)	#	3	C	S	⌘	-	163
4	0 1 0 0	EOT	DC4	\$	4	D	T	⌘	-	164
5	0 1 0 1	ENQ	NAK	%	5	E	U	⌘	-	165
6	0 1 1 0	ACK	SYN	&	6	F	V	0	-	166
7	0 1 1 1	BEL	ETB	'	7	G	W	±	-	167
8	1 0 0 0	BS	CAN	(	8	H	X	⌘	-	170
9	1 0 0 1	HT	EM	)	9	I	Y	⌘	-	171
10	1 0 1 0	LF	SUB	*	:	J	Z	⌘	-	172
11	1 0 1 1	VT	ESC	+	:	K	[	⌘	-	173
12	1 1 0 0	FF	FS	,	<	L	\	⌘	-	174
13	1 1 0 1	CR	GS	-	=	M	]	⌘	-	175
14	1 1 1 0	SO	RS	.	>	N	^	⌘	-	176
15	1 1 1 1	SI	US	/	?	O	(BLANK)	-	177	



**KEY**

CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX

### Display Controls Font

ROW	COLUMN				0	1	2	3	4	5	6	7							
	b8	b7	b6	b5	0	0	0	0	0	0	0	0							
BITS				0	0	0	0	0	0	0	0								
b4	b3	b2	b1	0	0	0	0	0	0	0	0								
0	0	0	0	0	N	U	0	DL	20	40	60	@	100	P	120	'	140	p	160
1	0	0	0	1	S	H	1	Q	21	41	61	!	101	A	121	a	141	q	161
2	0	0	1	0	S	X	2	D	22	42	62	"	102	B	122	b	142	r	162
3	0	0	1	1	E	X	3	D	23	43	63	#	103	C	123	c	143	s	163
4	0	1	0	0	E	T	4	D	24	44	64	\$	104	D	124	d	144	t	164
5	0	1	0	1	E	O	5	N	25	45	65	%	105	E	125	e	145	u	165
6	0	1	1	0	A	K	6	S	26	46	66	&	106	F	126	f	146	v	166
7	0	1	1	1	B	L	7	E	27	47	67	'	107	G	127	g	147	w	167
8	1	0	0	0	B	S	8	C	28	48	68	(	108	H	128	h	148	x	168
9	1	0	0	1	H	T	9	E	29	49	69	)	109	I	129	i	149	y	169
10	1	0	1	0	L	F	10	?	30	50	70	*	110	J	130	j	150	z	170
11	1	0	1	1	V	T	11	E	31	51	71	+	111	K	131	k	151	{	171
12	1	1	0	0	F	F	12	F	32	52	72	,	112	L	132	l	152		172
13	1	1	0	1	C	R	13	G	33	53	73	=	113	M	133	m	153	}	173
14	1	1	1	0	S	O	14	R	34	54	74	>	114	N	134	n	154	~	174
15	1	1	1	1	S	I	15	U	35	55	75	/	115	O	135	o	155	?	175



#### KEY

CHARACTER	ESC	33	OCTAL
		27	DECIMAL
		1B	HEX

### Display Controls Font (Cont)

8		9		10		11		12		13		14		15		COLUMN	
1 0 0		1 0 0 1		1 0 1 0		1 0 1 1		1 1 0 0		1 1 0 1		1 1 1 0		1 1 1 1		BIT b7 b6 b5 b4 b3 b2 b1	
ROW		ROW		ROW		ROW		ROW		ROW		ROW		ROW		ROW	
80	200 128 80	90	270 144 90	A0	240 160 A0	0	260 176 80	À	300 192 C0	Ð	320 208 D0	à	340 224 E0	Ɔ	360 240 F0	0 0 0 0	0
81	201 129 81	91	271 145 91	À	241 161 A1	±	261 177 81	Á	301 193 C1	Ñ	321 209 D1	á	341 225 E1	ç	361 241 F1	0 0 0 1	1
82	202 130 82	92	272 146 92	€	242 162 A2	2	262 178 82	Â	302 194 C2	Ò	322 210 D2	â	342 226 E2	ò	362 242 F2	0 0 1 0	2
83	203 131 83	93	273 147 93	£	243 163 A3	3	263 179 83	Ã	303 195 C3	Ó	323 211 D3	ã	343 227 E3	ó	363 243 F3	0 0 1 1	3
84	204 132 84	94	274 148 94	Ä	244 164 A4	B4	264 180 84	Ä	304 196 C4	Ô	324 212 D4	ä	344 228 E4	ô	364 244 F4	0 1 0 0	4
85	205 133 85	95	275 149 95	Ÿ	245 165 A5	µ	265 181 85	Å	305 197 C5	Õ	325 213 D5	å	345 229 E5	ö	365 245 F5	0 1 0 1	5
86	206 134 86	96	276 150 96	Å	246 166 A6	¶	266 182 86	Æ	306 198 C6	Ö	326 214 D6	æ	346 230 E6	ø	366 246 F6	0 1 1 0	6
87	207 135 87	97	277 151 97	§	247 167 A7	·	267 183 87	Ç	307 199 C7	Ø	327 215 D7	ç	347 231 E7	œ	367 247 F7	0 1 1 1	7
88	210 136 88	98	230 152 98	ˆ	250 168 A8	B8	270 184 88	È	310 200 C8	Ø	330 216 D8	è	350 232 E8	ø	370 248 F8	1 0 0 0	8
89	211 137 89	99	231 153 99	©	251 169 A9	1	271 185 89	É	311 201 C9	Ù	331 217 D9	é	351 233 E9	ù	371 249 F9	1 0 0 1	9
8A	212 138 8A	9A	232 154 9A	ª	252 170 AA	º	272 186 8A	Ê	312 202 CA	Ú	332 218 DA	ê	352 234 EA	ú	372 250 FA	1 0 1 0	10
8B	213 139 8B	9B	233 155 9B	<<	253 171 AB	>>	273 187 8B	Ë	313 203 CB	Û	333 219 DB	ë	353 235 EB	û	373 251 FB	1 0 1 1	11
8C	214 140 8C	9C	234 156 9C	Ɔ	254 172 AC	¼	274 188 8C	Ì	314 204 CC	Ü	334 220 DC	ì	354 236 EC	ü	374 252 FC	1 1 0 0	12
8D	215 141 8D	9D	235 157 9D	Ɔ	255 173 AD	½	275 189 8D	Í	315 205 CD	Ý	335 221 DD	í	355 237 ED	ÿ	375 253 FD	1 1 0 1	13
8E	216 142 8E	9E	236 158 9E	Ɔ	256 174 AE	Ɔ	276 190 8E	Î	316 206 CE	Ɔ	336 222 DE	î	356 238 EE	Ɔ	376 254 FE	1 1 1 0	14
8F	217 143 8F	9F	237 159 9F	Ɔ	257 175 AF	Ɔ	277 191 8F	Ï	317 207 CF	Ɔ	337 223 DF	ï	357 239 EF	Ɔ	377 255 FF	1 1 1 1	15



**Escape Sequences**

An escape sequence is a sequence of one or more ASCII graphic characters preceded by the C0 character ESC. For example,

ESC # 6

is an escape sequence that causes the current line of text to have double-width characters. Escape sequences use only 7-bit characters, and can be used in 7-bit or 8-bit environments.

**Control Sequences**

A control sequence is a sequence of one or more ASCII graphic characters preceded by CSI (9/11). CSI can also be expressed as the 7-bit code extension ESC [. So you can express all control sequences as escape sequences whose second character code is [. For example, the following two sequences are equivalent sequences that perform the same function (they cause the display to use 132 columns per line rather than 80).

CSI ? 3 h

ESC [ ? 3 h

Whenever possible, use CSI instead of ESC [ to introduce a control sequence. CSI can be used only in an 8-bit environment.

**Device Control Strings**

A device control string is a delimited string of characters used in a data stream as a logical entity for control purposes. It consists of an opening delimiter DCS, a command string (data), and a closing delimiter ST.

DCS is an 8-bit control character that can also be expressed as ESC P when coding for a 7-bit environment.

ST is an 8-bit control character that can also be expressed as ESC / when coding for a 7-bit environment.

**TRANSMITTED CODES****Main Keypad Function Keys**

Key	Code Transmitted
	DEL character.
TAB	HT character
RETURN	CR character only or a CR character and an LF character, depending on the set/reset state of Linefeed/New Line mode (LNM).

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**Main Keypad Function Keys (Cont)**

Key	Code Transmitted
CTRL	Does not transmit a code.
LOCK	Does not transmit a code.
SHIFT (2 keys)	Does not transmit a code.
SPACE BAR	SP character.
COMPOSE CHARACTER	Does not transmit a code.

**Editing Keys**

Key	Code Generated VT200 Mode	VT100, VT52, 4010/4014 Modes
FIND	CSI 1 ~	None
INSERT HERE	CSI 2 ~	None
REMOVE	CSI 3 ~	None
SELECT	CSI 4 ~	None
PREV SCREEN	CSI 5 ~	None
NEXT SCREEN*	CSI 6 ~	None

\* In 4010/4014 mode, NEXT SCREEN is used as a "CLEAR SCREEN" key.

**Cursor Control Keys**

Key	ANSI Mode*		VT52 Mode*	
	Reset Normal	Set Application	Normal	Application
↑	CSI A	SS3 A	ESC A	ESC A
↓	CSI B	SS3 B	ESC B	ESC B
→	CSI C	SS3 C	ESC C	ESC C
←	CSI D	SS3 D	ESC D	ESC D

\* ANSI mode applies to VT200 and VT100 modes. VT52 mode is ANSI-incompatible mode.

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## Auxiliary Keypad Keys

Key	VT100/VT200 ANSI Mode*		VT52 Mode*	
	Keypad Numeric Mode	Keypad Application Mode	Keypad Numeric Mode	Keypad Application Mode
0	0	SS3 p	0	ESC ? p
1	1	SS3 q	1	ESC ? q
2	2	SS3 r	2	ESC ? r
3	3	SS3 s	3	ESC ? s
4	4	SS3 t	4	ESC ? t
5	5	SS3 u	5	ESC ? u
6	6	SS3 v	6	ESC ? v
7	7	SS3 w	7	ESC ? w
8	8	SS3 x	8	ESC ? x
9	9	SS3 y	9	ESC ? y
-	-(minus)	SS3 m	-	ESC ? m
,	,(comma)	SS3 l	,	ESC ? l†
.	.(period)	SS3 n	.	ESC ? n
Enter	CR or CR LF	SS3 M	CR or CR LF	ESC ? M‡
PF1	SS3 P	SS3 P	ESC P	ESC P
PF2	SS3 Q	SS3 Q	ESC Q	ESC Q
PF3	SS3 R	SS3 R	ESC R	ESC R
PF4	SS3 S	SS3 S	ESC S	ESC S†

\* ANSI mode applies to VT200 and VT100 modes. VT52 mode is an ANSI-incompatible mode.

† You cannot generate these sequences on a VT52 terminal.

‡ Keypad Numeric Mode. ENTER generates the same codes as RETURN. You can change the code generated by RETURN with the Linefeed/New Line Mode. When reset, the Linefeed/New Line Mode causes RETURN to generate a single control character (CR). When set, the mode causes RETURN to generate two control characters (CR, LF).

---

**Top Row Function Keys**

Name on Legend Strip	Generic Name	Code Generated	
		VT200 Mode	VT100, VT52 Modes
HOLD SCREEN	(F1)*	-	-
PRINT SCREEN	(F2)*	-	-
SET-UP	(F3)*	-	-
DATA/TALK	(F4)*	-	-
BREAK	(F5)*	-	-
F6	F6	CSI 1 7 ~	-
F7	F7	CSI 1 8 ~	-
F8	F8	CSI 1 9 ~	-
F9	F9	CSI 2 0 ~	-
F10	F10	CSI 2 1 ~	-
F11 (ESC)	F11	CSI 2 3 ~	ESC
F12 (BS)	F12	CSI 2 4 ~	BS
F13 (LF)	F13	CSI 2 5 ~	LF
F14	F14	CSI 2 6 ~	-
HELP	(F15)	CSI 2 8 ~	-
DO	(F16)	CSI 2 9 ~	-
F17	F17	CSI 3 1 ~	-
F18	F18	CSI 3 2 ~	-
F19	F19	CSI 3 3 ~	-
F20	F20	CSI 3 4 ~	-

---

\* F1 through F5 are local function keys and do not generate codes.

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**Keys Used to Generate 7-Bit Control Characters**

<b>Control Character Mnemonic</b>	<b>Key Pressed With CTRL (All Modes)</b>	<b>Dedicated Function Key</b>
NUL	2, space	
SOH	A	
STX	B	
ETX	C	
EOT	D	
ENQ	E	
ACK	F	
BEL	G	
BS	H	F12 (BS)*
HT	I	TAB
LF	J	F13 (LF)*
VT	K	
FF	L	
CR	M	RETURN
SO	N	
SI	O	
DLE	P	
DC1	Q†	
DC2	R	
DC3	S†	
DC4	T	
NAK	U	
SYN	V	
ETB	W	
CAN	X	
EM	Y	
SUB	Z	
ESC	3, [	F11 (ESC)*
FS	4, /	
GS	5, ]	
RS	6, ~	
US	7, ?	
DEL	8	DELETE

---

\* Keys F11, F12, and F13 generate these 7-bit control characters only when the terminal is operated in VT100 mode, VT52 mode or 4010/4014 mode.

† These keystrokes are enabled only if XOFF support is disabled. If XOFF support is enabled, then CTRL-S is a "hold screen" local function and CTRL-Q is an "unhold screen" local function.

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**RECEIVED CODES**
**Compatibility Level (DECSCSCL)**

<b>Sequence</b>	<b>Action</b>
CSI 6 1 " p	Set terminal for level 1 (VT100 mode).
CSI 6 2 " p	Set terminal for level 2 (VT200 mode, 8-bit controls).
CSI 6 2 ; 0 " p	Set terminal for level 2 (VT200 mode, 8-bit controls).
CSI 6 2 ; 1 " p	Set terminal for level 2 (VT200 mode, 7-bit controls).
CSI 6 2 ; 2 " p	Set terminal for level 2 (VT200 mode, 8-bit controls).

**C0 (ASCII) Control Characters Recognized**

<b>Mnemonic</b>	<b>Name</b>	<b>Action</b>
NUL	Null	Ignored when received.
ENQ	Enquiry	Answerback message is generated.
BEL	Bell	Generates bell tone if bell is enabled.
BS	Backspace	Moves cursor to the left one character position: if cursor is at left margin, no action occurs.
HT	Horizontal tabulation	Moves cursor to next tab stop, or to right margin if there are no more tab stops. Does not cause autowrap.
LF	Linefeed	Causes a linefeed or a new line operation, depending on the setting of new line mode.
VT	Vertical tabulation	Processed as LF.
FF	Form feed	Processed as LF.
CR	Carriage return	Moves cursor to left margin on current line.
SO (LS1)	Shift out (lock shift G1)	Invokes G1 character set into GL. G1 is designated by a select-character-set (SCS) sequence.

---

**CO (ASCII) Control Characters Recognized (Cont)**

<b>Mnemonic</b>	<b>Name</b>	<b>Action</b>
SI (LS0)	Shift in (lock shift G0)	Invoke G0 character set into GL. G0 is designated by a select-character-set (SCS) sequence.
DC1	Device control 1	Also referred to as XON. If XOFF support is enabled, DC1 clears DC3 (XOFF), causing the terminal to continue trans- mitting characters (keyboard unlocks) unless KAM mode is currently set.
DC3	Device control 3	Also referred to as XOFF. If XOFF support is enabled, DC3 causes the terminal to stop transmitting characters until a DC1 control character is received.
CAN	Cancel	If received during an escape or control sequence, terminates and cancels the sequence. No error character is displayed. If received during a device control string, the DCS is ter- minated and no error character is displayed.
SUB	Substitute	If received during escape or control sequence, terminates and cancels the sequence. Causes a reverse question mark to be displayed. If re- ceived during a device control sequence, the DSC is termi- nated and reverse question mark is displayed.
ESC	Escape	Processed as escape sequence introducer. Terminates any escape, control or device control sequence which is in progress.
DEL	Delete	Ignored when received. Note: May not be used as a time fill character.

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**C1 Control Characters Recognized**

<b>Control Character</b>	<b>Equivalent 7-Bit Code Extension</b>	<b>Name</b>	<b>Action</b>
IND	ESC D	Index	Moves cursor down one line in same column. If cursor is at bottom margin, screen performs a scroll up.
NEL	ESC E	Next line	Moves cursor to first position on next line. If cursor is at bottom margin, screen performs a scroll up.
HTS	ESC H	Horizontal tab set	Sets one horizontal zontal tab stop at the column where the cursor is.
RI	ESC M	Reverse index	Moves cursor up one line in same column. If cursor is at top margin, screen performs a scroll down.
SS2	ESC N	Single shift G2	Temporarily invokes G2 character set into GL for the next graphic character. G2 is designated by a select-character-set(SCS) sequence.
SS3	ESC O	Single shift G3	Temporarily invokes G3 character set into GL for the next graphic character. G3 is designated by a select-character-set(SCS) sequence.
DCS	ESC P	Device control string	Processed as opening delimiter of a device control string for device control use.

---

**C1 Control Characters Recognized (Cont)**

<b>Control Character</b>	<b>Equivalent 7-Bit Code Extension</b>	<b>Name</b>	<b>Action</b>
CSI	ESC [	Control sequence introducer	Processed as control sequence introducer.
ST	ESC \	String terminator	Processed as closing delimiter of a string opened by DCS.

**CHARACTER SET SELECTION (SCS)****Designating "Hard" Character Sets**

<b>Character Set</b>	<b>Escape Sequence</b>	<b>Designate as:</b>
ASCII	ESC ( B	G0 (default)
	ESC ) B	G1
	ESC * B	G2 (VT200 mode only)
	ESC + B	G3 (VT200 mode only)
DEC Supplemental (VT200 mode only)	ESC ( <	G0
	ESC ) <	G1
	ESC * <	G2
	ESC + <	G3
UK National (VT100 mode only)	ESC ( A	G0
	ESC ) A	G1
DEC Special Graphics	ESC ( 0	G0
	ESC ) 0	G1
	ESC * 0	G2 (VT200 mode only)
	ESC + 0	G3 (VT200 mode only)

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**Designating “Soft” (Down-Line Loadable) Character Sets**

<b>Escape Sequence</b>	<b>Designate As:</b>
ESC ( Dscs	G0
ESC ) Dscs	G1
ESC * Dscs	G2
ESC + Dscs	G3

Dscs can consist of zero, one, or two intermediate characters and a final character.

Intermediate characters are in the range of 2/0 to 2/15; Final characters are in the range of 3/0 to 7/14 (see ASCII Code Table for column/row notation).

**Invoking Character Sets Using Lock Shifts**

<b>Control Name</b>	<b>Coding</b>	<b>Function</b>
LS0 – lock shift G0	SI	Invoke G0 into GL. (default)
LS1 – lock shift G1	SO	Invoke G1 into GL.
LS1R – lock shift G1, right	ESC ~	Invoke G1 into GR. VT200 mode only.
LS2 – lock shift G2	ESC n	Invoke G2 into GL. VT200 mode only.
LS2R – lock shift G2, right	ESC }	Invoke G2 into GR. (default) VT200 mode only.
LS3 – lock shift G3	ESC o	Invoke G3 into GL. VT200 mode only.
LS3R – lock shift G3, right	ESC	Invoke G3 into GR. VT200 mode only.

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**Invoking Character Sets Using Single Shifts**

<b>Control Name</b>	<b>Coding</b>	<b>Function</b>
SS2 – single shift G2	SS2 ESC N	Invokes G2 into GL for the next graphic character
SS3 – single shift G3	SS3 ESC O	Invokes G3 into GL for the next graphic character

**Select C1 Control Transmission**

<b>Control Name</b>	<b>Sequence*</b>	<b>Action</b>
7-bit C1 control transmission (S7C1T)	ESC sp F	Causes all C1 codes returned to the application to be converted to their equivalent 7-bit code extensions.

**NOTE**

**The S7C1T sequence is ignored when the terminal is in VT100 or VT52 mode.**

8-bit C1 control transmission (S8C1T)	ESC sp G	Causes the terminal to return C1 codes to the application without converting them to their equivalent 7-bit code extensions.
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\* sp is a space character

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**Terminal Modes**

<b>Name</b>	<b>Mnemonic</b>	<b>Set Mode</b>	<b>Reset Mode*</b>
Keyboard Action†	KAM	Locked CSI 2 h	Unlocked CSI 2 l
Insertion-replacement	IRM	Insert CSI 4 h	Replace CSI 4 l
Send-receive	SRM	Off CSI 12 h	On CSI 12 l
Line feed-new line	LNM	New line CSI 20 h	Line feed CSI 20 l
Cursor key	DECCKM	Application CSI ? 1 h	Cursor CSI ? 1 l
ANSI/VT52	DECANM	N/A CSI ? 2 l	VT52
Column	DECCOLM	132 column CSI ? 3 h	80 column CSI ? 3 l
Scrolling†	DECSCLM	Smooth CSI ? 4 h	Jump CSI ? 4 l
Screen†	DECSCNM	Reverse CSI ? 5 h	Normal CSI ? 5 l
Origin	DECOM	Origin CSI ? 6 h	Absolute CSI ? 6 l
Auto wrap	DECAWM	On CSI ? 7 h	Off CSI ? 7 l
Auto repeat†	DECARM	On CSI ? 8 h	Off CSI ? 8 l
Print form feed	DECPFF	On CSI ? 18 h	Off CSI ? 18 l
Print extent	DECPEX	Full screen CSI ? 19 h	Scrolling region CSI ? 19 l
Text cursor enable	DECTCEM	On CSI ? 25 h	Off CSI ? 25 l
Keypad	DECKPAM DECKPNM	Application ESC =	Numeric ESC >
Tektronix 4010/4014	DECTEK	On CSI ? 38 h	Off CSI ? 38 l

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\* The last character of each sequence is lowercase L (6/12)

† User Preference feature

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**Cursor Positioning**

<b>Name</b>	<b>Control Character</b>	<b>Sequence</b>	<b>Action</b>
Cursor up (CUU)	-	CSI Pn A	Moves cursor up Pn lines in the same column.
Cursor down (CUD)	-	CSI Pn B	Moves cursor down Pn lines in the same column.
Cursor forward (CUF)	-	CSI Pn C	Moves cursor right Pn columns.
Cursor backward (CUB)	-	CSI Pn D	Moves cursor left Pn columns.
Cursor position (CUP)	-	CSI Pl ; Pc H	Moves cursor to line Pl, column Pc. The numbering of the lines and columns depends on the state(set/reset) of origin mode (DECOM).
Horizontal and vertical position (HVP)	-	CSI Pl ; Pc f	Moves cursor to line Pl, column Pc. The numbering of the lines and columns depends on the state(set/reset) of origin mode (DECOM). Digital recommends using CUP instead of HVP.
Index (IND)	IND	ESC D	Moves cursor down one line in the same column. If the cursor is at the bottom margin the screen performs a scroll-up.
Reverse index (RI)	RI	ESC M	Moves cursor up one line in the same column. If the cursor is at the top margin the screen performs a scroll-down.

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**Cursor Positioning (Cont)**

<b>Name</b>	<b>Control Character</b>	<b>Sequence</b>	<b>Action</b>
Next line (NEL)	NEL	ESC E	Moves the cursor to the first position on the next line. If the cursor is at the bottom margin the screen performs a scroll-up.
Save cursor (DECSC)	-	ESC 7	Saves in terminal memory the: <ul style="list-style-type: none"><li>• cursor position</li><li>• graphic rendition</li><li>• character set shift state</li><li>• state of wrap flag</li><li>• state of origin mode</li><li>• state of selective erase</li></ul>
Restore cursor (DECRC)	-	ESC 8	Restores the states described for (DECSC) above. If none of these characteristics were saved: the cursor moves to home position, origin mode is reset, no character attributes are assigned, and the default character set mapping is established.

---

## Tab Stops

**NOTE:**

These sequences are affected by the User Preference Lock in Set-up.

Name	Control Character	Sequence	Action
Horizontal tab set (HTS)	HTS	ESC H	Sets a tab stop at the current column.
Tabulation clear (TBC)	-	CSI g	Clears a horizontal tab stop at cursor position.
		CSI 0 g	Clears a horizontal tab stop at cursor position.
		CSI 3 g	Clears all horizontal tab stops.

## Select Graphic Rendition (SGR)

You can select one or more character renditions at a time using the following format:

```
CSI Ps ;... Ps m
```

When you use multiple parameters, they are executed in sequence. The effects are cumulative. For example, to change from increased intensity to blinking-underlined, you can use:

```
CSI 0 ; 4 ; 5 m
```

When you select a single parameter, no delimiter(3/11) is used.

Ps	Action
0	All attributes off
1	Display bold
4	Display underscored
5	Display blinking
7	Display negative (reverse) image
2 2	Display normal intensity
2 4	Display not underlined
2 5	Display not blinking
2 7	Display positive image

---

### Select Character Attributes (DECSCA)

You can select all subsequent characters to be “selective erasable” or “not selective erasable” (see section on ERASING) using the following format:

**NOTE:**

**This sequence is supported only in VT200 mode.**

CSI Ps ” q

where:

<b>Ps</b>	<b>Action</b>
0	All attributes off (does not apply to SGR)
1	Designate character as “non-erasable” by DECSEL/DECSED (attribute on).
2	Designate character as “erasable” by DECSEL/DECSED (attribute off).

### Line Attributes

<b>Name</b>	<b>Sequence</b>	
	<b>Top half</b>	<b>Bottom Half</b>
<b>Double Height Line (DECDHL)</b>	ESC # 3	ESC # 4
	The same character must be used on both lines to form full character. If the line was previously single-width, single-height, all characters to the right of center are lost.	
<b>Single-Width Line (DECSWL)</b>	ESC # 5	
<b>Double-Width Line (DECDWL)</b>	ESC # 6	

**Editing**

<b>Name</b>	<b>Sequence</b>	<b>Action</b>
Insert line (IL)	CSI Pn L	Inserts Pn lines at the cursor.
Delete line (DL)	CSI Pn M	Deletes Pn lines starting at the line with the cursor.
Insert characters (ICH) (VT200 mode only)	CSI Pn @	Insert Pn blank characters at the cursor position, with the character attributes set to normal.
Delete character (DCH)	CSI Pn P	Deletes Pn characters starting with the character at the cursor position.

**Erasing**

<b>Name</b>	<b>Sequence</b>	<b>Action</b>
Erase character (ECH) (VT200 mode only)	CSI Pn X	Erases characters at the cursor position and the next n-1 character.
Erase in line (EL)	CSI K	Erases from the cursor to the end of the line, including the cursor position.
	CSI 0 K	Same as above.
	CSI 1 K	Erases from the beginning of the line to the cursor, including the cursor position.
Erase in display (ED)	CSI 2 K	Erases the complete line.
	CSI J	Erases from the cursor the end of the screen, including the cursor position.
	CSI 0 J	Same as above.
	CSI 1 J	Erases from the beginning of the screen to the cursor, including the cursor position.
	CSI 2 J	Erases the complete display.

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**Erasing (Cont)**

<b>Name</b>	<b>Sequence</b>	<b>Action</b>
Selective erase in line (DECSEL) (VT200 mode only)	CSI ? K	Erases all "erasable" characters (DECSCA) from the cursor to the end of the line.
	CSI ? 0 K	Same as above.
	CSI ? 1 K	Erases all "erasable" characters (DECSCA) from the beginning of the line to and including the cursor position.
Selective erase in display (DECSED) (VT200 mode only)	CSI ? 2 K	Erases all "erasable" characters (DECSCA) on the line.
	CSI ? J	Erases all "erasable" characters (DECSCA) from and including the cursor end of the screen.
	CSI ? 0 J	Same as above.
	CSI ? 1 J	Erases all "erasable" characters (DECSCA) from the beginning of the screen to and including the cursor.
	CSI ? 2 J	Erases all "erasable" characters (DECSCA) in the entire display.

**Set Top and Bottom Margins (DECSTBM)**

CSI Pt ; Pb r

Selects top and bottom margins defining the scrolling region. Pt is the line number of the first line in the scrolling region. Pb is the line number of the bottom line. If either Pt or Pb is not selected, they default to top and bottom respectively. Lines are counted from "1".

---

## Printing

Before you select a print operation, check printer status using the print status report (DSR) (see Reports section).

<b>Name</b>	<b>Sequence</b>	<b>Action</b>
Auto print mode	CSI ? 5 i	Turns on auto print mode. Subsequent display lines print when you move the cursor off the line using a linefeed, form feed, vertical tab, or autowrap. The printed line is terminated with a carriage return and the character which moved the cursor off the previous line (LF, FF, or VT (autowrap lines end with a linefeed)).
	CSI ? 4 i	Turns off auto print mode.
Printer controller	CSI 5 i	Turns on printer controller mode. The terminal transmits received characters to the printer without displaying them on the screen. All characters and character sequences except NUL, XON, XOFF, CSI 5 i, and CSI 4 i are sent to the printer. The terminal does not insert or delete spaces, or provide line delimiters, or select the correct printer character set. Printer controller mode is of higher priority than auto print mode. It can be selected during auto print mode. When in printer controller mode, keyboard activity continues to be directed to the host.
	CSI 4 i	Turns off printer controller mode.
Print cursor line	CSI ? 1 i	Prints the display line containing the cursor. The cursor position does not change. The print-cursor-line sequence is completed when the line prints.

---

**Printing (Cont)**

<b>Name</b>	<b>Sequence</b>	<b>Action</b>
Print screen	CSI i	Prints the screen display (full screen or scrolling region, depending on the Print Extent DECEXT selection). Printer form feed mode (DECPFF) selects either a form feed (FF) or nothing as the print terminator. The print screen sequence is completed when the screen prints.
	CSI 0 i	Same as above.
Select graphics to printer	CXI ? i	Causes subsequent ReGIS Hardcopy commands to direct the graphics display to the printer port. Text that is part of the graphics screen prints with the graphics.
	CSI ? 0 i	Same as above.
Select graphics to host	CSI ? 2 i	Causes subsequent ReGIS Hardcopy commands to direct the graphics display to the host port.

**User Defined Keys (DECUDK)**

The device control string format for down-line loading UDK functions is:

DCS Pc;PI | Ky1/st1;ky2/st2;...kyn/stn ST

where:

<b>Pc</b>	<b>Meaning</b>
None	Clear all keys before loading new values
0	Clear all keys before loading new values
1	Load new key values, clear old only where defined
<b>PI</b>	<b>Meaning</b>
None	Lock the keys against future redefinition
0	Lock the keys against future redefinition
1	Do not lock the keys against future redefinition

Key (kyn)	Value (stn)
F6	17
F7	18
F8	19
F9	20
F10	21
F11	23
F12	24
F13	25
F14	26
HELP	28
DO	29
F17	31
F18	32
F19	33
F20	34

### Down-Line Loading Characters (DRCS)

You can down-line load your DRCS character set using the following DECDLD device control string format:

DCS Pfn;Pcn;Pe;Pcms;Pw;Pt { Dscs Sxsbp1;Sxsbp2;...;Sxsbpn ST

Parameter descriptions are as follows:

### DECDLD Parameter Characters

Parameter	Name	Description
Pfn	Font number	0 and 1.
Pcn	Starting character number	Selects starting character in DRCS font buffer to be loaded.
Pe	Erase control	0 = erase all characters in this DRCS set 1 = erase only the characters that are being reloaded 2 = erase all characters in all DRCS sets (this font buffer number and other font buffer numbers)
	Character Matrix size	0 = Device default (7 × 10) 1 = (not used) 2 = 5 × 10 3 = 6 × 10 4 = 7 × 10

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### DECDDL Parameter Characters (Cont)

Parameter	Name	Description
Pw	Width attribute	0 = Device default (80 columns) 1 = 80 column 2 = 132 column
Pt	Text/full-cell	0 = Device default (text) 1 = Text 2 = Full-cell

*Dscs* defines the character set "name" for the soft font, and is used in the SCS (select character set) escape sequence.

*Sxbp1;Sxbp2;...;Sxbpn* are sixel bit patterns (1 to 94 patterns) for characters separated by semicolons. Each sixel bit pattern has the form:

S...S/...S

where the first S...S represents the upper columns (sixels) of the DRCS character, the slash advances the sixel pattern to the lower columns of the DRCS character, and the second S...S represents the lower columns (sixels) of the DRCS.

### Clearing a Down-Line Loaded Character Set

You can clear a character set that you have down-line loaded using the following DECDDL control sequence:

```
DCS 1;1;2 { sp @ ST
```

Down-line loaded character sets are also cleared by:

- performing the power-up self-test
  - using the Set-Up Recall or Default functions
  - using RIS or ESC c sequences
-

## Reports

### Device Attributes (DA)

Communication	Sequence	Meaning
Host to VT240 (primary DA request)	CSI c or CSI 0 c	"What is your service class code and what are your attributes?"
VT240 to host (primary DA response)	CSI ? 62; 1; 2; 3; 4; 6; 7; 8 c	"I am a service class 2 (VT200 family) terminal (62) with 132 columns (1), printer port (2), ReGIS display (3), sixel graphics I/O (4), selective erase (6), DRCS (7), and UDK (8).
Host to VT240 (secondary DA response)	CSI > c or CSI > 0 c	"What type of ter- minal are you, what is your firmware version, and what hardware options do you have installed?"
VT240 to host (secondary DA response)	CSI > 1; Pv; Po c	"I am a VT240 (2), my firmware version is (Pv), and I have P0 option installed.

Where:

Pv = firmware/software version

Po: 0 = no options

1 = Integral modem

EXAMPLE: CSI>2;10;1c = VT240 version 1.0, with integral modem option

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**Device Status Report (DSR)**

<b>Communication</b>	<b>Sequence</b>	<b>Meaning</b>
Host to VT240 (request for terminal status)	CSI 5 n	"Please report your operating status using a DSR control se- quence. Are you in good operating con- dition or do you have a malfunction?"
VT240 to host (DA response)	CSI 0 n	"I have no malfunction."
	CSI 3 n	"I have a malfunction."
Host to VT240 (request for cursor position)	CSI 6 n	"Please report your cursor position using a CPR (not DSR) control sequence."
VT240 to host (CPR response)	CSI Pv; Ph R	"My cursor is posi- tioned at (Pv); (Ph)."

Where:

Pv = vertical position (row)

Ph = horizontal position (column)

**DSR - Printer Port**

<b>Communication</b>	<b>Sequence</b>	<b>Meaning</b>
Host to VT240 (request for printer status)	CSI ? 15 n	"What is the printer status?"
VT240 to host	CSI ? 13 n	"DTR has not been asserted on the printer port since power up or reset - in essence, I have no printer."
	CSI ? 10 n	"DTR is asserted on the printer port. The printer is ready."
	CSI ? 11 n	"DTR is not currently asserted on the printer port. The printer is not ready."

---

**DSR – User Defined Keys**

Host to VT240 (request for UDK status)	CSI ? 25 n	“Are User Defined Keys locked or unlocked?”
VT240 to host	CSI ? 20 n	“User Defined Keys are unlocked.”
	CSI ? 21 n	“User Defined Keys are locked.”

**Identification (DECID)**

ESC Z

Causes the terminal to send a primary DA response sequence. DECID, however, is not recommended. You should use the primary DA request for this purpose.

**ReGIS Graphics Protocol Controls Mode**

The ReGIS graphics mode is available through the VT200 and VT100 modes only. You enter ReGIS by sending a ReGIS device control string to the terminal.

**Control String  
Parameter**

DCS p or DCS 0 p	Causes VT240 to enter ReGIS at previous command level. (ReGIS is at the highest command level if the terminal was powered-up after the last device control string.)
DCS 1 p	Causes VT240 to enter ReGIS at highest command level.
DCS 2 p	Causes VT240 to enter ReGIS at previous command level with commands displayed on the screen's bottom line (command display mode enabled).
DCS 3 p	Causes VT240 to enter ReGIS at highest command level with commands displayed on the screen's bottom line (command mode enabled).
ST	Exit ReGIS mode and return to text mode.

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## Terminal Reset

Name	Sequence	Action
Soft terminal reset (DECSTR)	CSI ! p	Sets terminal to power-up default states
Hard terminal reset (RIS)	ESC c	Replaces all set-up parameters with NVR values or power-up default values if NVR values do not exist.

## Tests (DECTST)

The sequence format for invoking terminal tests is:

CSI 4 ; ..... ; Ps y

Where:

Ps	Test
0	Test 1, 2, 3, 4, and 6
1	Power-up self-test
2	EIA port data loopback test
3	Printer port loopback test
4	Color Bar Test
5	(not used)
6	EIA port modem control line loopback test
7	20 mA port loopback test
8	(not used)
9	Repeat other test in parameter string
10	Full screen blue
11	Full screen green
12	Full screen red
13	Full screen white
14	Integral modem analog loopback test
15	Integral modem external loopback test
16 and up	(not used)

### NOTE:

**DECTST causes a communications line disconnect.**

## Adjustments (DECALN)

ESC # 8 Displays screen alignment pattern (full screen of "Es").

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**VT52 Escape Sequences**

<b>Escape Sequence</b>	<b>Function</b>
ESC A	Cursor up
ESC B	Cursor down
ESC C	Cursor right
ESC D	Cursor left
ESC F	Enter "graphics" mode
ESC G	Exit "graphics" mode
ESC H	Cursor to home
ESC I	Reverse line feed
ESC J	Erase to end of screen
ESC K	Erase to end of line
ESC Y Line Column*	Direct cursor address
ESC Z†	Identify
ESC =	Enter alternate keypad mode
ESC >	Exit alternate keypad mode
ESC <	Enter ANSI mode
ESC ^	Enter auto print mode
ESC _	Exit auto print mode
ESC W	Enter printer controller mode
ESC X	Exit printer controller mode
ESC ]	Print screen
ESC V	Print cursor line

\* Line and column numbers for direct cursor addressing are single character codes whose value is the desired number plus 37 (octal).

† The response to ESC Z in VT52 mode is ESC / Z.

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**ReGIS****ReGIS Command Summary**

<b>Command Key Letter</b>	<b>ReGIS Command Name</b>	<b>Description</b>
P	Position	Positions the graphics cursor without performing any writing.
V	Vector	Draws vectors (straight lines) between screen locations specified within the command.
C	Curve	Draws circles, arcs and/or curves using screen locations specified within the command.
T	Text	Controls display of graphics text strings, and allows specification of characters to be displayed.
W	Write	Specifies writing controls, such as shading
S	Screen	Specifies screen controls, such as erasing the screen.
@	Macrograph	Defines a macrograph. Macrographs are used for storing and recalling ReGIS command strings, allowing a complex figure, which is to be used more than once to be stored as a macrograph, and invoked as a single command.
L	Load	Controls definition and loading of alternate characters which can be displayed using the Text command.
R	Report	Reports information (such as active position, and error codes); initiates report position interactive mode.
;	Resynchronization	Semicolon serves as a resynchronization command.

---

## ReGIS Power On/Reset Default Values Summary

Command Type	Command	Default Description
Screen Control	S(A[0,0] [799,499])	Defines the screen as having coordinate values of [0,0] for upper left corner, and [799,479] for lower right.
Screen Control	S[0,0]	No scroll is to occur.
Screen Control	S(H(P[50,0]))	Any printing from the screen will be offset at the printer 50 coordinates to approximate centering on 8-1/2 inch wide paper.
Screen Control	S(M0(L0)1(L25)2(L50)3(L75))	Output map values for monochrome monitor are dark for M0, dim grey for M1, light grey for M2, and white for M3.
Screen Control	S(M0(AD)1(AB)2(AR)3(AG))	Output map values for color monitor are dark for M0, blue for M1, red for M2, and green for M3.
Screen Control	S(I0)	Output map location 0 is selected for background intensity value, with dark background for color and monochrome monitors (default value for M0).
Screen Control	S(T0)	No time delay.
Write Control	W(M1)	Pixel vector (PV) multiplication of 1.
Write Control	W(P1)	Solid line selected for writing pattern.
Write	W(P(M2))	Pattern multiplication factor of 2.
Write Control	W(N0)	Negative pattern control disabled.
Write Control	W(F3)	Writing enabled to both bit map planes.

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**ReGIS Power On/Reset Default Values Summary (Cont)**

<b>Command Type</b>	<b>Command</b>	<b>Default Description</b>
Write Control	W(I3)	Output map location3 selected for write tasks, resulting in white for monochrome, green for color, since these are the default values for M3.
Write Control	W(V)	Overlay writing in effect.
Write Control	W(S0)	Shading disabled.
Text	T(A0)	Character set containing standard ASCII characters is selected for text processing.
Text	T(S1)	Standard character cell size 1 is selected for text processing.
Text	T(S[9,20])	Display cell size associated with standard character cell size 1.
Text	T(U[8,20])	Unit cell size associated with standard character cell size 1.
Text	T[+9,+0]	Character positioning associated with standard character cell size 1.
Text	T(H2)	Height multiplication factor of 2.
Text	T(D0 S1 D0)	String and character tilt disabled.
Text	T(I0)	Italics disabled.
Text	T(M[1,2])	Size multiplication factor of 1 for width, and 2 for height.
Load	L(A1)	Select set 1 for loading.

---

**Screen Control Command Summary**

<b>Command</b>	<b>Description</b>
S (A[X,Y] [X,Y])	Display addressing; allows defining addressing of screen at different size or orientation than actually true for VT240.
S [X,Y]	Scroll; uses relative X and Y values to define scrolling of screen data within the bit map while leaving coordinate system unchanged.
S <PV number>	Scroll; uses PV offset values to define scrolling of screen data within the bit map while leaving coordinate system unchanged.
S (H)	Hard copy control defining whole screen area is printed.
S (H[X,Y] [X,Y])	Hard copy control defining amount of screen to be printed; bracketed values are actual screen coordinates identify opposing positions to be used to define portion of screen to be printed.
S (H[X,Y])	Hard copy control defining amount of screen to be printed; bracketed values are actual screen coordinates used with current cursor location to identify opposing positions defining portion of screen to be printed.
S (H(P[X,Y]))	Print offset; defines relative offset value from current printhead location to where upper left corner of image is to be printed; [50,0] is default at power on, until new value is defined; any new value remains in effect until redefined.
S (M<n>(<Lvalue>))	Output mapping for changing mono shade values; Any or all values can be changed in a given command; defines the shade to be stored in selected (<n>) output map location.
S (M<n>(<RGB>))	Output mapping for changing color values using RGB specifier; any or all values can be changed in a given command; defines the color to be stored in selected (<n>) output map location.

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**Screen Control Command Summary (Cont)**

<b>Command</b>	<b>Description</b>
S (M<n>(HLS))	Output mapping for changing color values using HLS specifier; any or all values can be changed in a given command; defines the color to be stored in selected (<n>) output map location; default values are HLS values for default RGB values.
S (I<n>)	Background intensity select; selects output map location (<n>) to be used for background.
S (I(RGB))	Background intensity select; selects output map location containing closest color to RGB value specified.
S (I(HLS))	Background intensity select; selects output map location containing closest color to HLS value specified.
S (T<0-255>)	Time delay; defines number of ticks of real time clock to be counted for a delay.
S (E)	Screen erase; causes all graphic images on screen to be rewritten at current background intensity.
S (I<value>,E)	Screen erase to defined background intensity; defines a background intensity, and erases screen to that value.
S (W(M<n>))	Temporary write defining multiplication factor for PV values; defines number of coordinates to be affected by each PV value specified for a scroll.
S (C<0 or 1>)	Graphic Cursor Control; disables (C0) or enables (C1) display of diamond cursor.

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### Position Command Summary

<b>Command</b>	<b>Description</b>
P [X,Y]	Positioning using [X,Y] values to define a new active position; the [X,Y] values can be absolute, relative, or absolute/relative.
P <PV>	Positioning using PV values to define a relative repositioning of the active position.
P (W(M<n>))	Temporary write control defining multiplication factor for PV values; defines number of coordinates to be affected by PV values.
P (B)	Begin a bounded sequence; causes current active position to be stored for reference at the end of the sequence.
P (S)	Start an unbounded sequence; causes a dummy position to be stored for reference at the end of the sequence.
P (E)	End of sequence; causes last stored (B) or (S) value to be referenced; if value referenced was stored by a (B), active position will be defined by the stored value; If value referenced was stored by (S), active position will remain at its current location.
P [ ]	Null position; used in conjunction with write tasks to force write tasks to begin with first location of pattern memory.

### Write Control Command Summary

<b>Command</b>	<b>Description</b>
W (M<n>)	PV multiplication; defines multiplication factor (<n>) for PV values can be used as temporary write control for other types of commands.
W (P<0-9>)	Select standard pattern; selects one of ten stored write patterns for write tasks.
W (P<binary>)	Specify binary pattern; allows specification of unique writing patterns for write tasks. The specified pattern can be up to 8 bits in length.

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**Write Control Command Summary (Cont)**

<b>Command</b>	<b>Description</b>
W P(M<1-16>))	Pattern multiplication; used to define the number of times each bit of the pattern memory will be processed. Pattern multiplication can be combined with either select standard pattern or the specify binary pattern, or by itself, to define a multiplication factor for the last specified pattern.
W (N<0-1>)	Negative pattern control; when on (N1), allows reversing effect of currently selected write pattern.
W (F<0-3>)	Foreground plane control; provides a mask which determines which planes of the bit map can be written to during write tasks.
W (I<0-3>)	Foreground intensity select; defines an output map address (<0-3>) to be used for write tasks; writing puts address of that location into bit map.
W (I (<RGB>)	Foreground intensity select; defines writing tasks to occur using the output map address containing the color closest to the RGB value specified.
W (I (<HLS>)	Foreground intensity; defines writing to occur using output map address containing the color closest to the HLS value specified.
W (V,E,C, or R)	Four option letters available to define type of writing to occur: (C) for complement writing; (E) for erase writing; (R) for replace writing; (V) for overlay writing.
W (S<0-1>)	Shading on/off control; when on (S1), enables shading at currently selected pattern, with the shading reference line defined by the Y axis value of the active position when (S1) is invoked.
W (S [,Y])	Shading reference line select; selects a horizontal shading reference line defined by [,Y], which can be either an absolute or relative value.
W (S (x) [X])	Shading reference line select; selects a vertical shading reference line defined by[X], which can be either an absolute or relative value.

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**Write Control Command Summary (Cont)**

<b>Command</b>	<b>Description</b>
W (S '<character>')	Shading character select; allows graphic objects to be filled using the character specified.

**Vector Commands Summary**

<b>Command</b>	<b>Description</b>
V [ ]	Draw dot; used to write to a single pixel defined by current active position; No cursor movement occurs.
V [X,Y]	Draw line using [X,Y] value to define a position to which a line is to be drawn from the current active position; the [X,Y] value can be an absolute, relative, or absolute/relative positioning value.
V <PV>	Draw line using PV values to define a position to which a line is to be drawn, relative to the current active position, in the direction defined by the PV value.
V (B)	Begin a bounded sequence; causes current active position to be stored for reference at the end of the sequence.
V (S)	Start an unbounded sequence; causes a dummy position to be stored for reference at the end of the sequence.
V (E)	End of sequence; causes last stored (B) or (S) value to be referenced; If value referenced was stored by a (B), a line is drawn from the active position where (E) is sensed, to the location stored by (B); If value referenced was stored by (S), no line is drawn, and active position remains at current position.
V (W (<suboptions>))	Temporary write control; used to invoke write control values different from those currently in effect, without altering those write control values; temporary write control values remain in effect only for the duration of write tasks they are invoked for.

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## Curve Commands Summary

Command	Description
C [X,Y]	Circle with center at current position; [X,Y] defines a point on the circumference of the circle; the specified [X,Y] value can be absolute, relative, or absolute/relative position.
C (C) [X,Y]	Circle with center at specified position; [X,Y] defines a point to serve as the circle center, while current active position defines a point on the circumference; the [X,Y] value can be absolute, relative, or absolute/relative position.
C (A<degrees>) [X,Y]	Arc with center at current position; [X,Y] defines the starting point for drawing the arc, while the signed value of the <degrees> (+ or -) determines which direction the arc will be drawn from that point: + for counterclockwise, and - for clockwise; the [X,Y] value can be absolute, relative, or absolute/relative position.
C (A<degrees>C) [X,Y]	Arc with center at specified position; [X,Y] defines the center, while the current active position is the point from which the arc is drawn; The signed value of <degrees> (+ or -) determines which direction the arc will be drawn: + for counterclockwise, and - for clockwise; The [X,Y] value can be absolute, relative, or absolute/relative position.
C (B)<positions> (E)	Closed curve sequence; used to define a closed curve graphic image built from interpolation of [X,Y] positions specified within the option; the [X,Y] values specified can be absolute, relative, or absolute/relative.
C (S)<positions> (E)	Open curve sequence; used to define an open curve graphic image built from interpolation of [X,Y] positions specified within the option; the [X,Y] values specified can be absolute, relative, or absolute/relative.

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### Curve Commands Summary (Cont)

<b>Command</b>	<b>Description</b>
C [ ]	Null position; used with either open or closed sequence to affect interpolation; [] will cause a position equal to the last specified active position to be stored as part of the positions to be interpolated; when used at the beginning of a sequence, the value stored will be the current active position.
C (W (<suboptions>))	Temporary write control; used to invoke write control different from those currently in effect, without altering the overall write control values; temporary write control values remain in effect only for the duration of write tasks they are invoked for.

### Text Command Summary

<b>Command</b>	<b>Description</b>
T 'text'	Text string; provides identification of text to be displayed; Text string characters must be delimited by either single quotes ('text'), or double quotes("text").
T (A<0-3>)	Character set; defines which of four possible character sets (<0-3>) is to be used for processing text string characters.
T (S<0-16>)	Standard character cell size; defines a set of display cell, unit cell, and character positioning, values to be used in processing text string characters; any one of 17 different sets (<0-16>) can be invoked.
T (S [ <width,height> ])	Display cell size; allows varying size of cell used for text string characters; default value comes from screen coordinate value associated with the standard character cell size default of(S1); if specified in pixels, [9,20] is [9,10].

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**Text Command Summary (Cont)**

<b>Command</b>	<b>Description</b>
T [X,Y]	Character positioning; allows varying of positioning between text string characters; default value comes from position value associated with the standard character cell size default of (S1); [X,Y] values are relative.
T (U [<width,height>])	Unit cell size; allows varying size of unit used for text string characters; default value comes from screen coordinate value associated with the standard character cell size default of (S1). In pixels, [8,20] is [8,10].
T (H<1-25>)	Height multiplier; when invoked, the height multiplier will change the display cell and unit cell size height values to a value equal to 10 times the specified multiplier ([1-25]), without affecting width values, or positioning.
T (D<a> S<0-16>)	String tilt; used to define a tilt of text string characters, as a whole, relative to the normal horizontal baseline; <a> defines the degrees of the tilt; <0-16> provides a standard set value from which positioning during the tilt can be computed.
T (D<a> S<0-16> D a )	String/character tilt; used to define separate tilt values for the string, and the characters in the text string; the first <a> defines the degrees of tilt for the string; the second <a> defines the degrees of tilt for the characters in the string; <0-16> provides a standard set value from which positioning during the tilt can be computed.
T (I<a>)	Italics; defines a degree of tilt (<a>) for characters without changing their orientation to the current baseline.

---

**Text Command Summary (Cont)**

<b>Command</b>	<b>Description</b>
T (B)<options>(E)	Temporary text control; allows selecting text values which differ from those currently defined, without affecting the current values; the temporary values remain in effect until (E) is invoked.
T <PV>	PV spacing; Uses PV values to enable superscript, subscript, and overstrike functions.
T (W (<options>))	Temporary write control; used to invoke write control values different from those currently in effect, without altering the overall write control values; temporary write control values are only in effect for the text command they are invoked for.
T (M [width,height])	Size multiplication; provides multiplication factors for the height and width values of the unit cell size associated with standard cell size 1; the minimum multiplication for height and width is 1; the maximum multiplication is 16 for width and 127 for height.

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## Load Command Summary

Command	Description
L (A<1-3>)	Select set; defines which of the three loadable character sets is to be selected for any subsequent load cell activity.
L (A"<name>")	Specify name; provides a name ("<name>") of up to ten characters in length to be applied to the currently selected set; specify name can be combined with the select set: (A<1-3> "<name>").
L "<ASCII>" <hex pairs>	Load cell; used to generate characters to be stored in the selected set; "<ASCII>" is a single ASCII character which provides an identity for the character cell; <hex pairs> are used to define the bit pattern of the character to be stored on line-by-line basis.

## Macrograph Summary

Syntax	Description
@<letter>	Invoke macrograph; causes content of the selected macrograph (<letter>), a single case insensitive letter, to be invoked on the screen starting at the current cursor location.
@:<letter> <definition>@;	Define macrograph; defines the single, case insensitive letter the macrograph is to be stored under, and the definition to be stored.
@.	Clear all macrographs; when invoked, deletes stored macrograph descriptions from all 26 macrograph storage locations.
@:<letter>@;	Clear defined macrograph; used to clear the contents of a single macrograph storage location; this option is actually a define macrograph option invoked with no definition.

---

**Report Command Summary**

<b>Command</b>	<b>Description</b>
R (P)	Cursor position; causes reporting of the current active position.
R (M (<letter>))	Macrograph contents; causes reporting of the contents of the specified macrograph storage location.
R (M (=) )	Macrograph storage status; causes reporting of how much space has been assigned to macrograph storage, and how much of that space is currently free.
R (L)	Character set; cause reporting of set currently selected for loading.
R (E)	Error; causes reporting of the last error encountered by the parser.
R (P (I))	Report position interactive; places VT240 in a mode where cursor can be repositioned from the keyboard.

**Report Command Error Condition Option Responses**

<b>Code</b>	<b>Condition</b>	<b>Description</b>
0	No Error	No error has been detected since the last resynchronization character(;); a 0 will be reported as the error character (<M>).
1	Ignore Character	An unexpected character was encountered, and ignored; the error character (<M>) will represent the character ignored.
2	Extra Option Coordinates	The syntax S(H[X,Y][X,Y]) contained more than two coordinate pairs; the extra coordinate pairs were ignored; always returns 0 for the error character (<M>).
3	Extra Coordinate Elements	The syntax [X,Y] contained more than two coordinate elements all but the first two elements were ignored; always returns 0 as the error character (<M>).
4	Alphabet Out Of Range	The syntax L(A<0-3>) contained a number less than 0 or greater than 3; always returns 0 for the error character (<M>).
5	Reserved	

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**Report Command Error Condition Option Responses (Cont)**

<b>Code</b>	<b>Condition</b>	<b>Description</b>
6	Reserved	
7	Begin/Start Overflow	The stacking limit of 16 (B) and (S) position and/or vector commands was exceeded; Subsequent (B) or (S) commands were ignored; the error character(<M>) represents either a B or an S.
8	Begin/Start Underflow	A position or vector command (E) was encountered with no corresponding (B) or (S) option preceding it; the (E) option is ignored; the error character (<M>) represents the E option letter.
9	Text Standard Size Error	A standard set number of less than 0 or greater than 16 was attempted by a text command standard set select; always returns 0 as the error character (<m>).

**4010/4014**
**Entering/Exiting 4010/4014 Mode**

There are two ways to enter and exit 4010/4014 mode: using set-up or escape sequences.

<b>Sequence</b>	<b>Function</b>
CSI ? 3 8 h	Enters 4010/4014 mode.
CSI ? 3 8 l	Exits 4010/4014 mode.

**NOTE**

**The VT240 enters 4010/4014 in alpha mode, and exits 4010/4014 to the VT200, 7-bit control mode.**

**Alpha Mode Summary**

ESC	Set LCE
ESC NUL	Set LCE
ESC ESC	Set LCE
ESC ENQ	Set bypass and return terminal status
BEL	Ring bell
ESC BEL	Ring bell
BS	Move one space left
ESC BS	Move one space left
HT	Move one space right
ESC HT	Move one space right
LF	Move one line down
ESC LF	Set LCE. Ignore filler LF and CR
ESC CR	Set LCE. Ignore filler LF and CR

---

**Alpha Mode Summary (Cont)**

VT	Move one line up
ESC VT	Move one line up
ESC FF	Erase and home (page)
CR	Move to left margin
ESC ETB	Make copy
ESC CAN	Set bypass condition
ESC SUB	Set GIN and bypass condition
FS	Set point plot
ESC FS	Set point plot
GS	Set graph and dark vector
ESC GS	Set graph and dark vector
RS	Set incremental plot
ESC RS	Set incremental plot
SP	Move one space right
ESC 0	Select smallest character size
ESC :	Select smallest character size
ESC ;	Select smallest character size
ESC 1	Select small character size
ESC 8	Select small character size
ESC 9	Select small character size
ESC 2	Select large character size
ESC 3	Select largest character size
ESC DEL	Set LCE.

**NOTE**

- 1. LCE is a flag indicating an escape sequence introduction condition.**
- 2. All non-control ASCII characters are print characters in Alpha mode.**

**Graph and Point Plot Mode Summary**

ESC NUL	Set LCE
ESC ENQ	Set bypass and return terminal status
BEL	Ring bell
ESC LF	Set LCE and ignore filler LFs and CRs
ESC FF	Erase and home and go to Alpha
CR	Set Alpha and lift
ESC ETB	Make copy
ESC CAN	Set bypass condition
ESC SUB	Set GIN and bypass condition
FS	Set point plot
ESC FS	Set point plot
GS	Set graph and do a dark vector
ESC GS	Set graph and do a dark vector
RS	Set incremental plot
ESC RS	Set incremental plot
US	Set Alpha mode
ESC US	Set Alpha mode

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**Graph and Point Plot Mode Summary (Cont)**

SP	High X or high Y coordinate value
!	High X or high Y coordinate value
"	High X or high Y coordinate value
#	High X or high Y coordinate value
\$	High X or high Y coordinate value
%	High X or high Y coordinate value
&	High X or high Y coordinate value
'	High X or high Y coordinate value
(	High X or high Y coordinate value
)	High X or high Y coordinate value
*	High X or high Y coordinate value
+	High X or high Y coordinate value
,	High X or high Y coordinate value
-	High X or high Y coordinate value
.	High X or high Y coordinate value
/	High X or high Y coordinate value
0	High X or high Y coordinate value
1	High X or high Y coordinate value
2	High X or high Y coordinate value
3	High X or high Y coordinate value
4	High X or high Y coordinate value
5	High X or high Y coordinate value
6	High X or high Y coordinate value
7	High X or high Y coordinate value
8	High X or high Y coordinate value
9	High X or high Y coordinate value
:	High X or high Y coordinate value
;	High X or high Y coordinate value
<	High X or high Y coordinate value
=	High X or high Y coordinate value
>	High X or high Y coordinate value
?	High X or high Y coordinate value
@	High X or high Y coordinate value
[	Low Y coordinate value
\	Low Y coordinate value
]	Low Y coordinate value
^	Low Y coordinate value
_	Low Y coordinate value

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**Graph and Point Plot Mode Summary (Cont)**

	Low Y
ESC	Set Normal, Solid Vector
ESC a	Set Normal, Dotted Vector
ESC b	Set Normal, Dot-Dashed Vector
ESC c	Set Normal, Short Dashed Vector
ESC d	Set Normal, Long Dashed Vector
ESC e	Set Normal, Solid Vector
ESC f	Set Normal, Solid Vector
ESC g	Set Normal, Solid Vector
ESC h	Set Bold, Solid Vector
ESC i	Set Bold, Dotted Vector
ESC j	Set Bold, Dot-Dashed Vector
ESC k	Set Bold, Short Dashed Vector
ESC l	Set Bold, Long Dashed Vector
ESC m	Set Bold, Solid Vector
ESC n	Set Bold, Solid Vector
ESC o	Set Bold, Solid Vector
{	Low Y
[	Low Y
]	Low Y
-	Low Y
DEL	Low Y or NO-OP (note 2)
ESC ?	Low Y (note 2)
ESC DEL	Set LCE

**NOTE**

- 1. LCE is a flag indicating an escape sequence introduction condition.**
  - 2. The affect of DEL as a Low Y character can be disabled by the DEL implies Low Y option in graphics set-up; if DEL cannot be used, the program can substitute ESC ? which performs the same function as DEL.**
  - 3. All uppercase alphabetical characters can be used for High X or High Y coordinate values.**
  - 4. All lowercase alphabetical characters can be used for Low Y coordinate values.**
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**Incremental Plot Mode**

ESC NUL	Set LCE (note 1)
ESC ENQ	Set bypass and return terminal status
ESC BEL	Ring bell
ESC LF	Set LCE and ignore filler LF's and CR's
ESC CR	Set LCE and ignore filler LF's and CR's
ESC FF	Go Alpha and erase and home
CR	Set Alpha and left margin
ESC ETB	Make copy
ESC CAN	Set bypass
ESC SUB	Set bypass and GIN
ESC	Set LCE
ESC ESC	Set LCE
FS	Set point plot mode
ESC FS	Set point plot mode
GS	Set graph mode
ESC GS	Set graph mode
US	Set Alpha mode
ESC US	Set Alpha mode
Space	Turn beam off (pen up)
P	Turn beam on (pen down)
D	Move up (north)
E	Move up, right (northeast)
A	Move right (east)
I	Move down, right (southeast)
H	Move down (south)
J	Move down, left (southwest)
B	Move left (west)
F	Move up, left (northwest)

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## Gin Mode

Gin mode is exited from keyboard only. While in GIN, only arrow keys are used (either shifted or unshifted) to reposition cross hair cursor. Gin mode is exited by activating any key normally active in VT100 mode. GIN mode exits to Alpha mode.

## Bypass Condition

ESC ENQ	Set Bypass and return terminal status
ESC CAN	Set Bypass with no other action
ESC SUB	Set Bypass and go to GIN
BEL	Clear bypass and ring bell (if enabled)
ESC BEL	Clear bypass and ring bell (if enabled)
LF	Clear bypass and cause new line
ESC LF	Clear bypass, set LCE, and ignore filler LFs and CRs
ESC CR	Clear bypass, set LCE, and ignore filler LFs and CRs
CR	Clear bypass, move cursor to left margin, and go to Alpha
US	Clear bypass and go to graph
ESC US	Clear bypass and go to graph
ESC ETB	Clear bypass and make copy
ESC FF	Clear bypass, go to Alpha, and clear screen and home

### NOTE

1. LCE is flag indicating an escape sequence introduction condition.
  2. NEXT SCREEN key performs same function as ESC FF.
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