digital

VT100 PROGRAMMING REFERENCE CARD

7-BIT ASCII CODE

Octal Code	Char	Octal Code	Char	Octal Code	Char	Octal Code	Char
000	NUL	040	SP	100	@	140	`
001	SOH	041	!	101	A	141	a
002	STX	042	"	102	B	142	b
003	ETX	043	#	103	C	143	c
004	EOT	044	$	104	D	144	d
005	ENQ	045	%	105	E	145	e
006	ACK	046	&	106	F	146	f
007	BEL	047	' (apos)	107	G	147	g
010	BS	050	(	110	H	150	h
011	HT	051	)	111	I	151	i
012	LF	052	*	112	J	152	j
013	VT	053	+	113	K	153	k
014	FF	054	, (comma)	114	L	154	l
015	CR	055	– (minus)	115	M	155	m
016	SO	056	. (period)	116	N	156	n
017	SI	057	/	117	O	157	o
020	DLE	060	0	120	P	160	p
021	DC1	061	1	121	Q	161	q
022	DC2	062	2	122	R	162	r
023	DC3	063	3	123	S	163	s
024	DC4	064	4	124	T	164	t
025	NAK	065	5	125	U	165	u
026	SYN	066	6	126	V	166	v
027	ETB	067	7	127	W	167	w
030	CAN	070	8	130	X	170	x
031	EM	071	9	131	Y	171	y
032	SUB	072	:	132	Z	172	z
033	ESC	073	;	133	[	173	{
034	FS	074	<	134	\	174	|
035	GS	075	=	135	]	175	}
036	RS	076	>	136	∧	176	~
037	US	077	?	137	—	177	DEL

NOTE: The following control characters are generated differently from previous DIGITAL terminals.

Code	VT100	Previous Terminal
NUL	CTRL – Space bar	CTRL – @
RS	CTRL – ~	CTRL – ∧
US	CTRL – ?	CTRL – —

CURSOR CONTROL KEY CODES

Cursor Key (arrow)	VT52 Mode	ANSI/Cursor Key Mode Reset	ANSI/Cursor Key Mode Set
Up	ESC A	ESC [A	ESC O A
Down	ESC B	ESC [B	ESC O B
Right	ESC C	ESC [C	ESC O C
Left	ESC D	ESC [D	ESC O D

SPECIAL GRAPHICS CHARACTERS

Octal Code	Graphic with US or UK Set	Graphic with "Special Graphics" Set
137	—	Blank
140	\	♦ Diamond
141	a	∴ Checkerboard (error indicator)
142	b	HT horizontal tab
143	c	FF form feed
144	d	CR carriage return
145	e	LF line feed
146	f	° Degree symbol
147	g	± Plus/minus
150	h	NL new line
151	i	VT vertical tab
152	j	┘ Lower-right corner
153	k	┐ Upper-right corner
154	l	┌ Upper-left corner
155	m	└ Lower-left corner
156	n	+ Crossing lines
157	o	– Horizontal line - Scan 1
160	p	– Horizontal line - Scan 3
161	q	– Horizontal line - Scan 5
162	r	– Horizontal line - Scan 7
163	s	– Horizontal line - Scan 9
164	t	├ Left "T"
165	u	┤ Right "T"
166	v	┴ Bottom "T"
167	w	┬ Top "T"
170	x	| Vertical Bar
171	y	≤ Less than or equal to
172	z	≥ Greater than or equal to
173	{	π Pi
174	|	≠ Not equal to
175	}	£ UK pound sign
76	~	· Centered dot

ANSI COMPATIBLE MODE

CURSOR MOVEMENT COMMANDS

Cursor up	ESC [Pn A
Cursor down	ESC [Pn B
Cursor forward (right)	ESC [Pn C
Cursor backward (left)	ESC [Pn D
Direct cursor addressing	ESC [Pl; Pc H
Direct cursor addressing	ESC [Pl; Pc f
Index	ESC D
Next Line	ESC E
Reverse index	ESC M
Save cursor and attributes	ESC 7
Restore cursor and attributes	ESC B

LINE SIZE (DOUBLE-HEIGHT AND DOUBLE-WIDTH) COMMANDS

Change this line to double-height top half	ESC # 3
Change this line to double-height bottom half	ESC # 4
Change this line to single-width single-height	ESC # 5
Change this line to double-width single-height	ESC # 6

CHARACTER ATTRIBUTES

ESC [Ps;Ps;Ps;...,Ps m

Ps =		
	0 or None	All Attributes Off
	1	Bold on
	4	Underscore on
	5	Blink on
	7	Reverse video on

ERASING

From cursor to end of line	ESC [K
From cursor to end of line	ESC [0 K
From beginning of line to cursor	ESC [1 K
Entire line containing cursor	ESC [2 K
From cursor to end of screen	ESC [J
From cursor to end of screen	ESC [0 J
From beginning of screen to cursor	ESC [1 J
Entire screen	ESC [2 J

PROGRAMMABLE LEDs

ESC [Ps;Ps;...Ps q

Ps =		
	0 or None	All LEDs Off
	1	L1 on
	2	L2 on
	3	L3 on
	4	L4 on

CHARACTER SETS (G0 AND G1 DESIGNATORS)

Character Set	G0 Designator	G1 Designator
United Kingdom (UK)	ESC (A	ESC) A
United States (USASCII)	ESC (B	ESC) B
Special graphics characters and line drawing set	ESC (0	ESC) 0
Alternate character ROM	ESC (1	ESC) 1
Alternate character ROM special graphics characters	ESC (2	ESC) 2

SCROLLING REGION

ESC [Pt ; Pb r

TAB STOPS

Set tab at current column	ESC H
Clear tab at current column	ESC [g
Clear tab at current column	ESC [0 g
Clear all tabs	ESC [3 g

MODES

Mode Name	Mode	To Set Sequence	Mode	To Reset Sequence
Line feed/new line	New line	ESC [20h	Line feed	ESC [20/ *
Cursor key mode	Application	ESC [?1h	Cursor	ESC [?1/ *
ANSI/VT52 mode	ANSI		VT52	ESC [?2/ *
Column mode	132 Col	ESC [?3h	80 Col	ESC [?3/ *
Scrolling mode	Smooth	ESC [?4h	Jump	ESC [?4/ *
Screen mode	Reverse	ESC [?5h	Normal	ESC [?5/ *
Origin mode	Relative	ESC [?6h	Absolute	ESC [?6/ *
Wraparound	On	ESC [?7h	Off	ESC [?7/ *
Auto repeat	On	ESC [?8h	Off	ESC [?8/ *
Interlace	On	ESC [?9h	Off	ESC [?9/ *
Graphic proc. option	On	ESC 1	Off	ESC 2
Keypad mode	Application	ESC =	Numeric	ESC >

*The last character of the sequence is a lowercase L (154₈).

REPORTS

Cursor Position Report

Invoked by	ESC [6 n
Response is	ESC [Pl; Pc R

Status Report

Invoked by	ESC [c
Invoked by	ESC [0 c
Response is	ESC [?1 ;Ps c

What Are You

Invoked by	ESC [c
Invoked by	ESC [0 c
Response is	ESC [?1 ;Ps c

Ps =		
	0	Base VT100, no options
	1	Processor option (STP)
	2	Advanced video option (AVO)
	3	AVO and STP
	4	Graphics processor option (GPO)
	5	GPO and STP
	6	GPO and AVO
	7	GPO, STP, and AVO

Alternately invoked by ESC Z (not recommended). Response is the same.

RESET

ESC c

CONFIDENCE TESTS

Fill Screen with "Es"	ESC # 8
Invoke Test(s)	ESC [2 ; Ps y

Ps =	1	Power-up self test (ROM checksum, RAM, NVR, keyboard and AVO if installed)
	2 (Loop back connector required)	Data Loop Back
	4 (Loop back connector required)	EIA Modern Control Test
	8	Repeat selected test(s) indefinitely (until failure or power off)

VT52 COMPATIBLE MODE

Cursor Up	ESC A
Cursor Down	ESC B
Cursor Right	ESC C
Cursor Left	ESC D
Select Special Graphics character set	ESC F
Select ASCII character set	ESC G
Cursor to home	ESC H
Reverse line feed	ESC I
Erase to end of screen	ESC J
Erase to end of line	ESC K
Direct cursor address	ESC Pl Pc (see note 1)
Identify	ESC Z (see note 2)
Enter alternate keypad mode	ESC =
Exit alternate keypad mode	ESC >
Enter ANSI mode	ESC <

NOTE 1: Line and column numbers for direct cursor address are single character codes whose values are the desired number plus 37₈. Line and column numbers start at 1.

NOTE 2: Response to ESC Z is ESC / Z.

AUXILIARY KEYPAD CODES

Key	VT52 Numeric Mode	VT52 Application Mode	ANSI Numeric Mode	ANSI Application Mode
0	0	ESC ?p	0	ESC O p
1	1	ESC ?q	1	ESC O q
2	2	ESC ?r	2	ESC O r
3	3	ESC ?s	3	ESC O s
4	4	ESC ?t	4	ESC O t
5	5	ESC ?u	5	ESC O u
6	6	ESC ?v	6	ESC O v
7	7	ESC ?w	7	ESC O w
8	8	ESC ?x	8	ESC O x
9	9	ESC ?y	9	ESC O y
— (minus)	— (minus)	ESC ?m	— (minus)	ESC O m
, (comma)	, (comma)	ESC ?/ *	, (comma)	ESC O l *
. (period)	. (period)	ESC ?n	. (period)	ESC O n
ENTER	Same as RETURN	ESC ?M	Same as RETURN	ESC O M
PF1	ESC P	ESC P	ESC O P	ESC O P
PF2	ESC Q	ESC Q	ESC O Q	ESC O Q
PF3	ESC R	ESC R	ESC O R	ESC O R
PF4	ESC S	ESC S	ESC O S	ESC O S

*The last character of the sequence is a lowercase L (154₈).