

VT100 Family Programming Summary

This appendix provides a summary of VT100 family escape and control sequences. Sequences unique to the VT101, VT102, and VT131, and the VT125 are in [Appendix C](#) and [Appendix D](#), respectively.

Control Characters

Name	Character Mnemonic	Octal Code	Function
Null	NUL	000	Ignored when received (not stored in input buffer), used as a fill character.
Enquire	ENQ	005	Transmits answerback message.
Bell	BEL	007	Generates a bell tone.
Backspace	BS	010	Moves cursor to the left one character position, unless it is at the left margin, in which case no action occurs.
Horizontal Tab	HT	011	Moves cursor to the next tab stop, or to the right margin if there are no more tab stops.
Line Feed	LF	012	Causes a line feed or a new line operation. (Refer to line feed/new line mode.)
Vertical Tab	VT	013	Processed as LF.
Form Feed	FF	014	Processed as LF.
Carriage Return	CR	015	Moves cursor to left margin on the current line.
Shift Out	SO	016	Selects G1 character set, as designated by a select character set sequence.
Shift In	SI	017	Selects G0 character set, as designated by a select character set sequence.
Device Control 1	DC1	021	Processed as XON. Causes terminal to continue transmitting characters.
Device Control 3	DC3	023	Processed as XOFF. Causes terminal to stop transmitting all characters except XOFF and XON.

Name	Character Mnemonic	Octal Code	Function
Cancel	CAN	030	If received during an escape or control sequence, sequence is cancelled and the substitution character is displayed.
Substitute	SUB	032	Processed as CAN.
Escape	ESC	033	Processed as a sequence introducer.
Delete	DEL	177	Ignored when received (not stored in input buffer).

ANSI Compatible Sequences

Set Mode

Name	Mnemonic	Mode	Sequence
Line feed/new line	LMN	New line	ESC [20 h
Cursor key	DECCKM	Application	ESC [? 1 h
ANSI/VT52	DECANM	ANSI	N/A
Column	DECCOLM	132 column	ESC [? 3 h
Scrolling	DECSCLM	Smooth	ESC [? 4 h
Screen	DECSCNM	Reverse	ESC [? 5 h
Origin	DECOM	Relative	ESC [? 6 h
Auto wrap	DECAWM	On	ESC [? 7 h
Auto repeat	DECARM	On	ESC [? 8 h
Interlace	DECINLM	On	ESC [? 9 h

Reset Mode

Name	Mnemonic	Mode	Sequence*
Line feed/new line	LMN	Line feed	ESC [20 l
Cursor key	DECCKM	Cursor	ESC [? 1 l
ANSI/VT52	DECANM	VT52	ESC [? 2 l
Column	DECCOLM	80 column	ESC [? 3 l
Scrolling	DECSCLM	Jump	ESC [? 4 l
Screen	DECSCNM	Normal	ESC [? 5 l
Origin	DECOM	Absolute	ESC [? 6 l

Name	Mnemonic	Mode	Sequence*
Auto wrap	DECAWM	Off	ESC [? 7 L
Auto repeat	DECARM	Off	ESC [? 8 L
Interlace	DECINLM	Off	ESC [? 9 L

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

Cursor Key Codes Generated

Cursor	ANSI Character Generated	
	Reset (Cursor)	Set (Application)
Up	ESC [A	ESC O A
Down	ESC [B	ESC O B
Right	ESC [C	ESC O C
Left	ESC [D	ESC O D

Keypad Character Selection

Name	Mnemonic	Sequence
Alternate	DECKPAM	ESC =
Numeric	DECKPNM	ESC >

Auxiliary Keypad Codes Generated

Key	VT52 Alternate Keypad Mode Off (Numeric Mode)	VT52 Alternate Keypad Mode On	ANSI Numeric Keypad Mode	ANSI Alternate Keypad 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

Key	VT52 Alternate Keypad Mode Off (Numeric Mode)	VT52 Alternate Keypad Mode On	ANSI Numeric Keypad Mode	ANSI Alternate Keypad Mode
' (comma)	, (comma)	ESC ? 1*	, (comma)	ESC O 1*
. (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 lowercase L (1548).

Select Character Sets (SCS)

Character Set	G0 Designator	G1 Designator
United Kingdom (UK)	ESC (A	ESC) A
United States (USASCII)	ESC (B	ESC) B
Special 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
Name	Mnemonic	Sequence
Single Shift 2	SS2	ESC N
Single Shift 3	SS3	ESC O

Character Attributes

Name	Mnemonic	Sequence
Select graphic rendition (no attributes)	SGR	ESC [m
Select graphic rendition (no attributes)	SGR	ESC [0 m
Select graphic rendition (select attributes, reverse video, or underline as determined by cursor SET-UP feature)	SGR	ESC [4 m
Select graphic rendition (select attribute, reverse video, or underline as determined by cursor SET-UP feature)	SGR	ESC [7 m

Scrolling Region

Name	Mnemonic	Sequence
Set top and bottom margins	DECSTBM	ESC [Pt ; Pb r

Cursor Movement Commands

Name	Mnemonic	Sequence
Cursor up	CUU	ESC [Pn A
Cursor down	CUD	ESC [Pn B
Cursor forward (right)	CUF	ESC [Pn C
Cursor backward (left)	CUB	ESC [Pn D
Cursor position	CUP	ESC [Pl; Pc H
Cursor position (home)	CUP	ESC [H
Horizontal and vertical position	HVP	ESC [Pl; Pc f
Horizontal and vertical position (home)	HVP	ESC [f
Index	IND	ESC D
Reverse index	RI	ESC M
Next line	NEL	ESC E
Save cursor (and attributes)	DECSC	ESC 7
Restore cursor (and attributes)	DECRC	ESC 8

Tab Stops

Name	Mnemonic	Sequence
Horizontal tab set (at current column)	HTS	ESC H
Tabulation clear (at current column)	TBC	ESC [g
Tabulation clear (at current column)	TBC	ESC [0 g
Tabulation clear (all tabs)	TBC	ESC [3 g

Line Attributes

Name	Mnemonic	Sequence
Double-height top half	DECDHL	ESC # 3
Double-height bottom half	DECDHL	ESC # 4
Single-width single-height	DECSWL	ESC # 5
Double-width single-height	DECDWL	ESC # 6

Erasing

Name	Mnemonic	Sequence
Erase in line (cursor to end of line)	EL	ESC [K
Erase in line (cursor to end of line)	EL	ESC [0 K
Erase in line (beginning of line to cursor)	EL	ESC [1 K
Erase in line (entire line containing cursor)	EL	ESC [2 K
Erase in display (cursor to end of screen)	ED	ESC [J
Erase in display (cursor to end of screen)	ED	ESC [0 J
Erase in display (beginning of screen to cursor)	ED	ESC [1 J
Erase in display (entire screen)	ED	ESC [2 J

Reports

Name	Mnemonic	Sequence
Device status report (request status of VT101)	DSR	ESC [5 n
Response: Terminal OK Terminal not OK	DSR DSR	ESC [0 n ESC [3 n
Device status report (report cursor position)	DSR	ESC [6 n
Report cursor position	CPR	ESC [Pl; Pc R
Device attributes (what are you)	DA	ESC [c
Device attributes (what are you)	DA	ESC [0 c
Identify terminal (what are you)	DECID	ESC z (not recommended)
Device attributes Response	DA	ESC [? 1 ; Ps 0c

Reset

Name	Mnemonic	Sequence
Reset to initial state	RIS	ESC c

Test and Adjustments

Name	Mnemonic	Sequence
Screen alignment display (Fill screen with "Es")	DECALN	ESC # 8
Invoke confidence test (power-up test)	DECTST	ESC [2; 1 y
Invoke confidence test (Data loopback test, requires test connector)	DECTST	ESC [2; 2 y

Name	Mnemonic	Sequence
Invoke confidence test (repeat power-up test continuously until failure or power-off)	DECTST	ESC [2; 9 y
Invoke confidence test (repeat data loopback test continuously until failure or power-off, requires test connector)	DECTST	ESC [2; 10 y

Keyboard LEDs (Indicators)

Name	Mnemonic	Sequence
Load LEDs (all off)	DECLL	ESC [0 q
Load LEDs (L1 on)	DECLL	ESC [1 q
Load LEDs (L2 on)	DECLL	ESC [2 q
Load LEDs (L3 on)	DECLL	ESC [3 q
Load LEDs (L4 on)	DECLL	ESC [4 q

VT52 Compatible Mode

Set and Reset Modes

Name	Sequence
Enter ANSI mode	ESC <

Keypad Character Selection

Name	Sequence
Enter alternate keypad mode	ESC =
Exit alternate keypad mode	ESC >

Character Sets

Name	Sequence
Special graphics character set	ESC F*
Select US/UK character set (as determined by US/UK character SET-UP feature)	ESC G

Cursor Position

Name	Sequence
Cursor up†	ESC A

Name	Sequence
Cursor down†	ESC B
Cursor right†	ESC C
Cursor left†	ESC D
Cursor to home	ESC H
Direct cursor address	ESC Y P1 Pc‡
Reverse line feed	ESC I

† Same when sent from the terminal.

‡ 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 one.

Erasing

Name	Sequence
Erase to end of line	ESC K
Erase to end of screen	ESC J

Reports

Name	Sequence
Identify (what are you)	ESC Z
Response	ESC / Z

[Appendix A](#)

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<http://vt100.net/docs/tp83/appendixb.html>