ALTOS III

Terminal

Reference Guide

ALTOS III TERMINAL

ERRATA SHEET

The following corrections were made after the manual went to print. Please make these changes to the appropriate pages in your manual.

PAGE	**CHANGE**

10 to the escape sequences **ESC [h, ESC [l** , make the following changes in terminal modes:

add >1 = User line mode

change =1 = Blank screen mode
to =1 = Printer echo mode

change =2 = Formatted print mode
to =2 = Unformatted print mode

19 Status Line now reads:

```
                                LOC
                                BLK
                                HDX
CAPS  INSRT LINE  INSRT CHAR    FDX  <rr>-<cc>  *  PAUSE  BAUD
```

where * means Command Monitor mode
where PAUSE means No Scroll mode
where BAUD means Terminal baud rate: 110, 300, 600, 1200, 2400, 4800, 9600, 19.2K

23 at **PREV SCRN NEXT** add

T10 mode: Transmits **ESC K**

at Shift**PREV SCRN NEXT** add

T10 mode: Transmits **ESC J**

24 at the **HOME** key, in ANSI normal mode transmission

change **ESC [H**
to **ESC [f**

26 Delete Vertical Tab character from character set. Insert:

 Horizontal bar 4AH J

ALTOS III TERMINAL

REFERENCE GUIDE

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TRADEMARKS

ALTOS is a registered trademark of Altos Computer Systems.
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SAFETY WARNING

The terminal power cable is supplied with a safety ground. Do not use the terminal with an ungrounded outlet. Disconnect the power cable from the terminal before removing the top cover for any reason.

Dangerous voltages are present when the terminal is on and may remain after the power is off. Be extremely cautious. Do not work alone.

The internal phosphor of the CRT (cathode ray tube) is toxic. Wear safety goggles and rubber gloves whenever the CRT is handled. If the tube breaks, exposing skin or eyes to the phosphor, immediately rinse the affected area with cold water and consult a physician.

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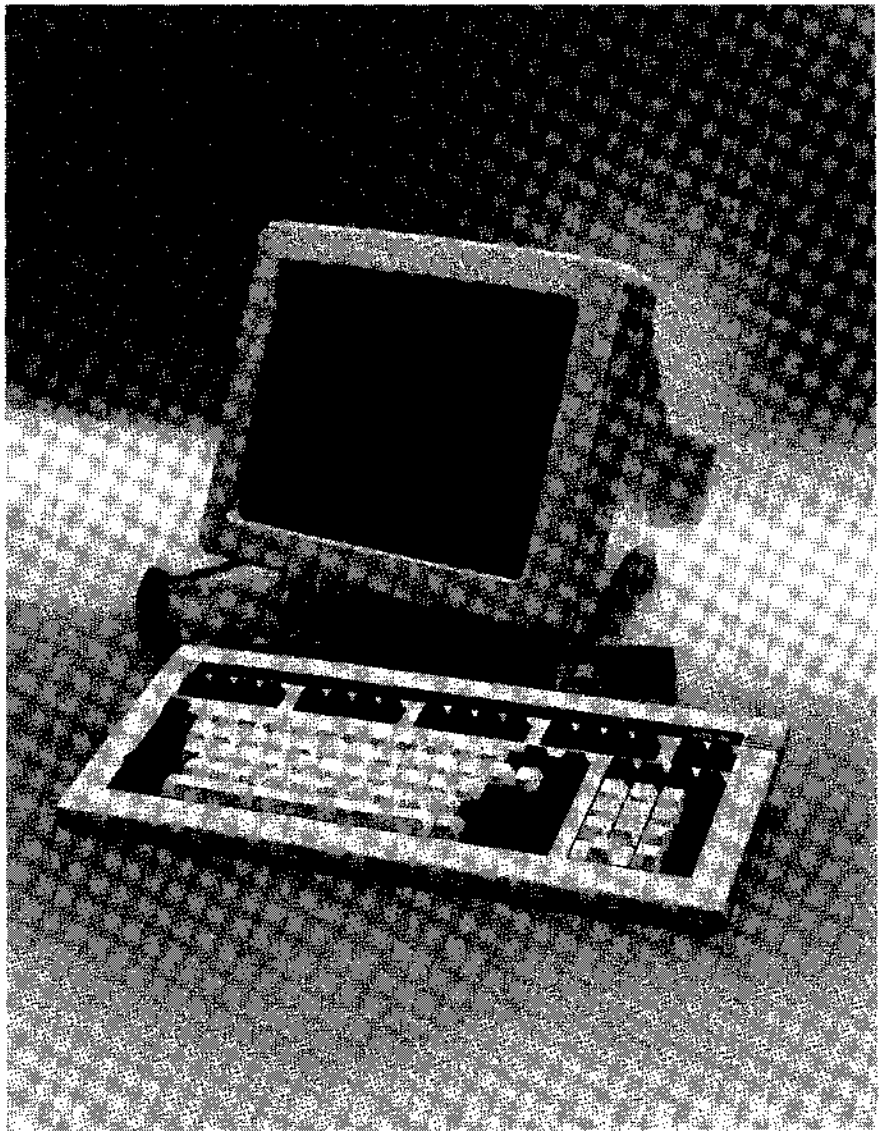
FCC WARNING: This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. 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.

CONTENTS

INTRODUCTION

This reference guide explains how to install, operate, and program the Altos III terminal. To use this guide effectively, it would be helpful for you to have a basic working knowledge of computer terminals. If you do not, please contact your dealer for assistance.



ALTOS III TERMINAL

INSTALLATION

Please read the following procedures and precautions before turning on the terminal.

1. Save all packing materials in case the terminal must be shipped or stored.

   Immediately notify the transfer company, if there is any damage.

2. Place the terminal on any sturdy table or desk.

3. Set the ON/OFF power switch on the front of the monitor base to OFF by pushing the bottom of the switch.

4. Connect the keyboard cable to its socket on the base of the monitor.

5. Connect the power cord to its socket on the base of the monitor. Then plug it into a nearby three-pronged, grounded electrical outlet.

6. Connect the RS-232 cable from your computer to the modem port on your terminal (see "Connector Pin Assignments").

7. Connect a printer (if required) with a RS-232 cable from the auxiliary port of your Altos III terminal.

POWER ON/OFF

After verifying that the terminal is properly installed, you are ready to proceed.

1. Turn on the terminal by pushing the top half of the ON/OFF switch.

2. Listen for an immediate beep. This indicates the power is on.

3. Watch for the cursor to display in the upper left-hand corner of the screen.

   If the CRT is warm, you will first see the screen flash several display patterns as the power-on self test is run.

4. Adjust the screen brightness with the thumbwheel on the front lower right-hand corner of the monitor. Turn it downward for high contrast and upward for dim.

5. Swivel the monitor and tilt it up or down, until it is comfortably positioned.

   The recommended position for the center of the screen is 10 to 20 degrees below eye level. The keyboard should be at or below elbow height.

6. To shut off the terminal, just push the bottom half of the ON/OFF switch.

SETUP PARAMETERS

Many parameters affecting how your Altos III terminal operates can be selected in a procedure called SETUP. Default values for each parameter have been chosen. You can change any of the parameters either for that terminal session, or to be saved for succeeding sessions.

Caution: Upon entering SETUP, although screen data is preserved, all data received from the host computer and any unprocessed data in the terminal buffer is lost.

1. Press **RESET/SET UP** to display the parameters and their current settings.

2. To move the cursor to a particular parameter field, use the arrow keys on the right side of the keyboard. CURSOR RIGHT and CURSOR LEFT select fields on a given row. CURSOR DOWN and CURSOR UP display the next and previous rows of fields.

3. Press **RETN** to change the value of the selected parameter field.

NOTE: Press **ESC** to reset all fields to the default settings.

4. Press **RESET/SET UP.**

   SAVE CHANGES FOR POWER-ON ? displays.

5. Press **Y** or **N** to save changes in the setup, or go to instruction 6.

   A. If you press **Y**, all changes are saved for the next time you turn on the terminal.

      The screen blanks for two to five seconds.

   B. If you press **N**, the selections remain in effect only until the terminal is turned off.

      The next time the terminal is turned on the setup is the same as it was before these changes were made.

6. Press **RESET/SETUP** to return to row 1 of the setup parameters.

FIELD LEVEL 1

Display:NORM Wrap:ON Scroll:JUMP Cursor:STEADY BLK Attribute:DIM

Parameter	Selections		Explanation
Display	NORM	(default)	Light characters on dark background
	RVRS		Dark characters on light background
Wrap	ON	(default)	Character wrap at end of line
	OFF		
Scroll	JUMP	(default)	One row at a time
	SMTH		Smooth even rate
Cursor	STEADY BLK	(default)	Steady block
	BLINK BLK		Blinking block
	STEADY UND		Steady underline
	BLINK UND		Blinking underline
Attribute	DIM	(default)	How highlighted characters look
	REVERSE		
	UNDERLN		

FIELD LEVEL 2 - TERMINAL
(The title TRMNL: appears at the right end of the field.)

Data Bits:8 Stop Bits:1 Parity:OFF Handshake:DTR Baud rate:9600

Parameter	Selections		Explanation
Data bits	8	(default)	Code length
	7		
Stop Bits	1	(default)	Number of stop bits
	2		
Parity	OFF	(default)	Parity type
	ODD		
	EVEN		
Handshake	DTR	(default)	Modem port handshake protocol
	XON/XOFF		

Parameter	Selections		Explanation
Baud rate	9600	(default)	Terminal port baud rate
	Other selections are: 19.2K, 110, 300, 600, 1200, 2400, 4800.		

FIELD LEVEL 3 - PRINTER
(The title PRNTR: appears at the right end of the field.)

DataBits:8 StopBits:1 Parity:OFF Handshake:DTR Baud rate:1200

Parameter	Selections		Explanation
Data bits	8	(default)	Code length
	7		
Stop Bits	1	(default)	Number of stop bits
	2		
Parity	OFF	(default)	Parity type
	ODD		
	EVEN		
Handshake	DTR	(default)	Printer port handshake protocol
	XON/XOFF		
Baud Rate	1200	(default)	Printer baud rate. Same speeds available as for terminal

FIELD LEVEL 4

Monitor:OFF Newline:CR Keyclick:ON Mrgn bell:ON Test:OFF

Parameter	Selections		Explanation
Monitor	OFF	(default)	
	ON		Displays control commands on terminal
Newline	CR	(default)	Sends CR or CR/LF at **RETN** key press
	CR/LF		
Keyclick	ON	(default)	Sound when you press key
	OFF		

Parameter	Selections		Explanation
Mrgn bell	OFF ON	(default)	Warning bell at right margin
Test	OFF ON	(default)	Diagnostic self test (requires loopback plugs; reinitializes nonvolatile memory). To exit, press and hold **RESET/SET UP.**

FIELD LEVEL 5

Transmission mode:FDX Terminal mode:ANSI Columns:80

Parameter	Selections		Explanation
Transmission Mode	FDX LOC HDX BLK	(default)	Communication flow choices
Terminal mode	ANSI T10	(default)	Terminalemulates a subset of the Altos II commands, or emulates a TVI 910
Columns	80 132	(default)	Screen width in columns.

ESCAPE CODE SEQUENCES

The following table briefly describes the actions performed by your Altos III terminal when it receives ANSI mode escape code sequences. The ANSI, or ALTOS private mnemonic for the command is also listed. ALTOS mnenomics begin with ACS. All others are ANSI mnemonics.

Within the escape code sequence, parameter values are noted within angle brackets (e.g., <PØ> is the first parameter).

Sequence	Default Mnemonic	Action
ESC 7	ACSSC	Saves the cursor position, attribute, wrap flag, character sets, and origin mode status.
ESC 8	ACSRC	Restores the previously saved cursor position, attribute, wrap flag, character sets, and origin mode status.
ESC =	ACSKPAM	Turns on the keypad application mode.
ESC >	ACSKPNM	Turns off the keypad application mode.
ESC D	IND	Moves the cursor down one row, scrolling the screen up at the last row.
ESC E	NEL	Moves the cursor to the far left column of the next row, scrolling the screen up at the last row.
ESC H	HTS	Sets a tab stop at the current cursor location.
ESC M	RI	Moves the cursor up one row, scrolling the screen down at the first row.
ESC Q		Programs function keys, see programmable keys

Sequence	Default	Mnemonic	Action
ESC c (or **ESC [z**)		RIS	Reinitializes the terminal. When XON/XOFF handshaking is active, an XON (DC1) character is sent upon completion.
ESC [<P0> A	1	CUU	Moves the cursor up P0 rows.
ESC [<P0> B	1	CUD	Moves the cursor down P0 rows.
ESC [<P0> C	1	CUF	Moves the cursor right P0 columns.
ESC [<P0> D	1	CUB	Moves the cursor left P0 columns.
ESC [<P0>;<P1> H	1	CUP	Moves the cursor to row P0, column P1.
ESC [<P0>;<P1> f	1	HVP	Moves the cursor to row P0, column P1 (equivalent to CUP).
ESC [<P0> J	0	ED	Erases data in the screen. P0 = 0 Erase from cursor to end. P0 = 1 Erase from beginning to cursor. P0 = 2 Erase all.
ESC [<P0> K	0	EL	Erases data in the cursor row. P0 = 0 Erase from cursor to end. P0 = 1 Erase from beginning to cursor. P0 = 2 Erase all.
ESC [<P0> @	1	ICH	Inserts P0 blank characters beginning at the cursor column.
ESC [<P0> L	1	IL	Inserts P0 blank rows beginning at the cursor row.

Sequence	Default	Mnemonic	Action
ESC [<P0> M	1	DL	Deletes P0 rows beginning at the cursor row.
ESC [<P0> P	1	DCH	Deletes P0 characters beginning at the cursor column.
ESC [0 c (or **ESC [c**)		DA	Requests the active terminal attributes (response from terminal is **ESC [? 1 ; 3c**).
ESC [<P0> g	0	TBC	Clears tab stops. P0 = 0 Clears the tab stop at the cursor column. P0 = 3 Clears all tab stops.
ESC [<P0>;<P1>;...<Pn> h		SM	Turns on the terminal modes (see below).
ESC [<P0>;<P1>;...<Pn> l		RM	Turns off the terminal modes.

Terminal modes are:

LNM	20 = Newline mode
ACSCKM	?1 = Cursor key mode
ACSCOLM	?3 = 132-column mode
ACSSCLM	?4 = Smooth scroll mode
ACSSCNM	?5 = Reverse screen mode
ACSOM	?6 = Origin mode
ACSAWM	?7 = Character wrap mode
ACSARM	?8 = Auto repeat mode
	>5 = Cursor not visible
	=1 = Blank screen mode
	=2 = Formatted print mode

All parameters which follow a question mark (?) embedded in the parameter list are treated as if they were immediately preceded by a question mark (?). For example, **ESC [1 ; ?3 ; 4 h** performs the same function as **ESC [1; ?3; ?4 h.**

A maximum of 16 modes can be changed with one sequence.

Sequence	Default	Mnemonic	Action

ESC [<P0> i	Ø	MC	Controls media copy operations. Ø = Copy the entire screen display to the auxiliary (printer) port. 4 = Disable the transparent print (auto print) mode. 5 = Enable the transparent print (auto print) mode. In transparent print mode, only **ESC c** and **ESC [4 i** are acted on.
ESC [<P0>;<P1>;...<Pn> m	Ø	SGR	Sets the hidden attribute selected in SETUP Ø = Normal Non-Ø = Enhance Characters in the graphics set always have the normal attribute, but the line-drawing characters are always treated as enhanced for purposes of clear and transfer protection.
ESC [<P0> n	Ø	DSR	Requests a status report. 5 = Requests the status of terminal (sends **ESC [<P0> n** where Ø= OK, 3= not OK 6 = Requests the cursor position (sends **ESC [<P0>;<P1> R** for cursor at row P0, column P1). 7 = Requests the printer status (sends **ESC [<P0> n** where Ø = Printer not in use, 1 = in use

Sequence	Default	Mnemonic	Action
ESC [<PØ> p	Ø	ACSDAT	Begins a field attribute at the cursor location. A field attribute occupies a space and has effect to the end of the screen or the start of another field attribute. Do not use field attributes in reverse screen mode. Ø = Normal 1 = Underline dim 2 = Dim 3 = Blink dim 4 = Underline 5 = Blink 6 = Underline blink 7 = Inverse 8 = Underline blink dim 9 = Inverse dim 1Ø = Inverse blink 11 = Inverse blink dim 12 = Inverse underline 13 = Inverse underline dim 14 = Inverse underline blink 15 = Inverse underline blink dim
ESC [<PØ>;<Pl>;...<Pn> q	Ø	ACSLL	Controls key status in the message field line. Ø = L1 and L2 OFF 5 = L1 ON (INS CHAR) 6 = L2 ON (INS LINE)
ESC [<PØ>;<Pl> r	Ø	ACSSTBM	Defines a scrolling region. PØ = beginning row number Pl = ending row number If <Pl> is Ø or absent, it defaults to 24.

Sequence	Mnemonic	Action
ESC # 3	ACSDHL	Define cursor row as top half of double-high double-wide line.
ESC # 4	ACSDHL	Define cursor row as bottom half of double-high double-wide line.
ESC # 5	ACSSWL	Define cursor row as single high, single-wide line.
ESC # 6	ACSDWL	Define cursor row as single-high, double-wide line.

NOTE: Double high characters display as single high characters on each of the two lines. Double wide characters display as a character followed by a space.

ESC # 8	ACSALN	Displays the screen alignment pattern.
ESC (Ø	SCS	Changes the GØ character set to the standard graphics set.
ESC (A	SCS	Changes the GØ character set to the UK set.
ESC (B	SCS	Changes the GØ character set to the standard US ASCII set.
ESC) Ø	SCS	Changes the G1 character set to the standard graphics set.
ESC) A	SCS	Changes the G1 character set to the UK set.
ESC) B	SCS	Changes the G1 character set to the standard US ASCII set.

T1Ø(TVI-91Ø) ESCAPE AND CONTROL SEQUENCES

When the Altos III terminal is in T1Ø mode, the following escape and control sequences are recognized.

Sequence	Action
ESC 1	Sets tab for entire column (top to bottom of screen
ESC 2	Clears tab at cursor
ESC 3	Clears all tabs on screen
ESC I	Moves cursor back to previous tab or beginning of line
ESC T	Erase characters from cursor to end of line, replaces with spaces
ESC Y	Erases characters from cursor to end of page, replaces with spaces
ESC +	Clears screen, replaces with spaces, homes cursor
ESC *	Clears screen, replaces with nulls, homes cursor
ESC [R	Allows host to control cursor within absolute row R
ESC]C	Allows host to control cursor position within column C
ESC =RC	Allows host to position cursor at row and column
ESC ?	Transmits cursor coordinates and terminator character to host
ESC "	Enables keyboard. Can only be caused by host input
ESC #	Disables keyboard
ESC @	Enables printer port
ESC A	Disables printer port, leaves display update on
ESC Q	Insert character
ESC E	Insert line

Sequence	Action
ESC W	Delete character
ESC R	Delete line
ESC G<P0>	Begins a field attribute at the cursor position, as described below:
ESC G0	Normal mode (attributes off)
ESC G1	Invisible (characters do not show on screen)
ESC G2	Blinking characters
ESC G3	Invisible blink (characters do not show on screen)
ESC G4	Reverse (dark on light display)
ESC G5	Invisible reverse
ESC G6	Blinking reverse (dark on light blinking characters
ESC G7	Invisible reverse blink
ESC G8	Underline
ESC G9	Invisible underline
ESC G:	Blink underline
ESC G;	Invisible blink underline
ESC G<	Reverse underline (dark on light and underline)
ESC G=	Invisible reverse underline
ESC G>	Reverse blink underline
ESC G?	Invisible reverse blink underline
ESC)	Hidden attribute set in setup
ESC (	Turns off hidden attribute
ESC .	Toggles cursor on/off
ESC Fn	Displays control character "n"

Sequence	Action
ESC U	Monitor mode on, displays control codes when received
ESC u	Stop monitor mode
ESC X	Stop monitor mode
ESC H	Toggles auto scroll on/off

RECOGNIZED CONTROL CHARACTERS

The following control characters are recognized and executed in both the ANSI and T10 modes, unless marked otherwise.

Code	Hex Value	Sequence	Action
BEL	07H	**CTRL G**	Sounds the bell
BS	08H	**CTRL H**	Moves the cursor left one column
HT	09H	**CTRL I**	Moves the cursor to the next tab stop or the right margin
LF	0AH	**CTRL J**	Moves the cursor down one row. If the newline mode is enabled, a CR (0DH) is also performed
VT	0BH	**CTRL K**	ANSI: cursor down one row T10: cursor up one row
FF	0CH	**CTRL L**	ANSI: cursor down one row T10: cursorright one space
CR	0DH	**CTRL M**	Moves the cursor to column 1 of the current row
SO	0EH	**CTRL N**	ANSI: Selects the G1 character set
SI	0FH	**CTRL O**	ANSI: Selects the G0 character set
DC1 (XON)	11H	**CTRL Q**	Resumes transmission of data, if it has been suspended by DC3 (13H)
	12H	**CTRL R**	T10: Enables transparent print mode
DC3 (XOFF)	13H	**CTRL S**	Suspends transmission of data if XON/XOFF handshaking is enabled
	14H	**CTRL T**	T10: Disable transparent print mode

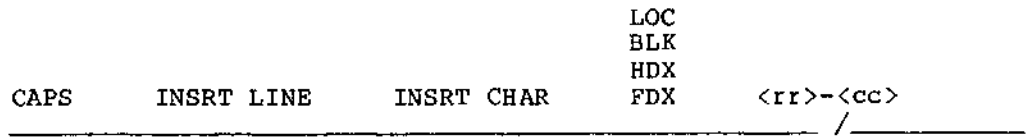
Code	Hex Value	Sequence	Action
CAN	18H	**CTRL X**	ANSI: Aborts an escape sequence and displays the error character
SUB	1AH	**CTRL Z**	ANSI:Treated as CAN (18H) T10: clear screen, change to spaces
ESC	1BH	**CTRL [**	Initiates an escape sequence
RS	1EH	**CTRL ^**	T10: Moves cursor to line one, column one
US	1FH	**CTRL _**	T10: Moves cursor to next line, column one

STATUS LINE DISPLAY

The top row of the screen displays the terminal status during normal operation. It displays the labels shown below.

Press **CTRL** with > (CURSOR RIGHT) to toggle display of the status line ON/OFF. The current setting of the status line (ON/OFF) is saved in nonvolatile memory when you save setup parameters.

Status Line Labels



Label	Mode
CAPS	Caps mode
INSRT LINE	Insert line on
INSRT CHAR	Insert character on
FDX,HDX,BLK,LOC	Transmission Mode:fullduplex, half duplex, block, or local
<rr>	Cursor row
<cc>	Cursor column

USER LINE

The last row on the screen is not included in the scrolling area. You can address this line (in an escape sequence) as you would any other line. It is addressed as row 25.

PROGRAMMABLE FUNCTION KEYS

The programmable function keys transmit the following codes.

Key	Shifted Code	Unshifted Code
F1	SOH ` CR	SOH @ CR
F2	SOH a CR	SOH A CR
F3	SOH b CR	SOH B CR
F4	SOH c CR	SOH C CR
F5	SOH d CR	SOH D CR
F6	SOH e CR	SOH E CR
F7	SOH f CR	SOH F CR
F8	SOH g CR	SOH G CR
F9	SOH h CR	SOH H CR
F10	SOH i CR	SOH I CR
F11	SOH j CR	SOH J CR
F12	SOH k CR	SOH K CR
F13	SOH l CR	SOH L CR
F14	SOH m CR	SOH M CR
F15	SOH n CR	SOH N CR
F16	SOH o CR	SOH O CR

NOTE SOH = Control-A CR = Carriage Return

Programming the Function Keys

Each of the function keys on your Altos III terminal can be programmed using an escape sequence. You must be in ANSI mode to program the function keys. The total memory available for the 32 programmable keys (16 unshifted and 16 shifted) is 256 characters.

In the escape sequence used to program the keys, the numbers 1 through 16 select the unshifted function keys F1 through F16, respectively, and the numbers 17 through 32 select the shifted function keys F1 through F16, respectively. The escape sequence is

ESC Q code ; string ESC

where: **code** is the number of the function key you are programming

; (semi-colon) is a delimiter

string is a group of characters, up to 64 per key

ESC is a string terminator (ST).

Control codes that are included in the string must be preceded by the DLE (Data Link Escape) control code (Control-P), which is discarded during processing. Control codes include 00H through 1FH, and 07FH.

To clear the programmable function keys, press **SHIFT** and **RESET/SETUP.** The programmable key functions are not saved in non-volatile memory.

FUNCTIONS OF NON-PRINTING KEYS

The functions performed by the non-printing keys on your Altos III terminal during normal (non-setup) operation are described below.

KEY	ACTION
RESET/SET UP	Enters the terminal setup mode.
Shift **RESET/SET UP** (RESET)	Reinitializes the terminal. With XON/XOFF handshaking enabled, an XON (DC1) is sent upon completion of either a reset or a reinitializa-tion; two XON characters are sent with a power-on.
ESC	Transmits the escape (ESC) character, 1BH.
DC TAB/TAB	Transmits the tab (HT) character, Ø9H.
Shift **DCTAB/TAB**	Transmits the decimaltab character ESC TAB
NO SCROLL	Toggles the no-scroll (screen lock) status ON and OFF when XON/XOFF or DTR handshaking isenabledandperformsthe appropriate handshake.
CAPS LOCK	Toggles the caps mode ON and OFF.
BACK SPACE	Transmits the backspace (BS) character, Ø8H.
BREAK/DEL	Transmits the delete/rubout (DEL) character, 7FH.
Shift **BREAK/DEL**	Transmits a .25 second break on the terminal port
RETN	Newline mode OFF: Transmits the carriage return (CR) character, ØDH. Newline mode ON: Transmits the newline (CR LF) character combination, ØDH and ØAH.

Key	Action
LINE FEED	Transmits the line feed (LF) character, ØAH.
PREV SCRN NEXT	Transmits the NEXT SCRN character sequence **ESC [S**
Shift**PREV SCRN NEXT**	Transmits the PREV SCRN character **ESC [T**
∧ (CURSOR UP)	ANSI normal mode: Transmits **ESC [A.** ANSI cursor key mode: Transmits **ESC O A.** T1Ø mode: Transmits **CTRL K.**
∧ (CURSOR UP) with **CTRL**	Selects jump scroll mode.
∨ (CURSOR DOWN)	ANSI normal mode: Transmits **ESC [B.** ANSI cursor key mode: Transmits **ESC O B.** T1Ø mode: Transmits **CTRL J.**
∨ (CURSOR DOWN) with **CTRL**	Selects smooth scroll mode.
> (CURSOR RIGHT)	ANSI normal mode: Transmits **ESC [C.** ANSI cursor key mode: Transmits **ESC O C.** T1Ø mode: Transmits **CTRL L.**
> (CURSOR RIGHT) with **CTRL**	Toggles the top row (status line) display ON and OFF.
< (CURSOR LEFT)	ANSI normal mode: Transmits **ESC [D.** ANSI cursor key mode: Transmits **ESC O D.** T1Ø mode: Transmits **CTRL H.**
< (CURSOR LEFT) with **CTRL**	Toggles the monitor mode ON and OFF.

Key	Action
HOME	ANSI normal mode: Transmits **ESC [H.** ANSI cursor key mode: Transmits **ESC O H.** T1Ø mode: Transmits **CTRL ^**
Shift **HOME** with **CTRL**	Moves the cursor to column 1 row 1; clears the screen.
INS CHAR	ANSI mode: Transmits **ESC [@.** T1Ø mode: Transmits **ESC Q.**
INS LINE	ANSI mode: Transmits **ESC [L.** T1Ø mode: Transmits **ESC E.**
DEL CHAR	ANSI mode: Transmits **ESC [P.** T1Ø mode: Transmits **ESC W.**
DEL LINE	ANSI mode: Transmits **ESC [M.** T1Ø mode: Transmits **ESC R.**
, (KEYPAD)	Numeric mode/T1Ø mode: Transmits a comma (,). ANSI keypad application mode: Transmits **ESC O l.**
- (KEYPAD)	Numeric mode/T1Ø mode: Transmits a dash (-). ANSI keypad application mode: Transmits **ESC O m.**
. (KEYPAD)	Numeric mode/T1Ø mode: Transmits a period/decimal point (.) ANSI keypad application mode: Transmits **ESC O n.**
Ø (KEYPAD)	Numeric mode/T1Ø mode: Transmits **Ø** (zero). ANSI keypad application mode: Transmits **ESC O p.**

Key	Action
1 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **1.** ANSI keypad application mode: Transmits **ESC O q.**
2 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **2.** ANSI keypad application mode: Transmits **ESC O r.**
3 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **3.** ANSI keypad application mode: Transmits **ESC O s.**
4 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **4.** ANSI keypad application mode: Transmits **ESC O t.**
5 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **5.** ANSI keypad application mode: Transmits **ESC O u.**
6 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **6.** ANSI keypad application mode: Transmits **ESC O v.**
7 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **7.** ANSI keypad application mode: Transmits **ESC O w.**
8 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **8.** ANSI keypad application mode: Transmits **ESC O x.**
9 (KEYPAD)	Numeric mode/T1Ø mode: Transmits **9.** ANSI keypad application mode: Transmits **ESC O y.**
ENTER	Numeric mode/T1Ø mode: Treated as **RETURN.** ANSI keypad application mode: Transmits **ESC O M.**

GRAPHICS CHARACTERS

The following graphics characters are displayed when hexadecimal codes 40H (@) through 5FH (_) are received and the special graphics character set is selected.

Graphic Symbol	Graphic Name	Hex Code	Keyboard Character
	Blank	40H	@
♦	Diamond	41H	A
▒	Checkerboard	42H	B
H_T	Horizontal tab	43H	C
F_F	Form feed	44H	D
C_R	Carriage return	45H	E
L_F	Line feed	46H	F
°	Degree symbol	47H	G
±	Plus/minus	48H	H
N_L	New line	49H	I
VT	Vertical tab	4AH	J
┘	Lower rh corner	4BH	K
┐	Upper rh corner	4CH	L
┌	Upper lh corner	4DH	M
└	Lower lh corner	4EH	N
+	Intersection	4FH	O
▀	Rectangle	50H	P
▄	Low rectangle	51H	Q
▌	Left rectangle	52H	R
▐	Right rectangle	53H	S

Graphic Symbol	Graphic Name	Hex Code	Keyboard Character
▬	High rectangle	54H	T
├	Left t-bar	55H	U
┤	Right t-bar	56H	V
┴	Bottom t-bar	57H	W
┬	Top t-bar	58H	X
│	Vertical bar	59H	Y
≤	Less/equal	5AH	Z
≥	Greater/equal	5BH	[
π	Pi	5CH	\
≠	Not equal	5DH	]
£	UK pound sign	5EH	^
•	Centered dot	5FH	_

CONNECTOR PIN ASSIGNMENTS

The terminal and auxiliary port connector pin asssignments are listed below. Leave pins 9 through 19, 24, and 25 disconnected. If there are wires in the RS-232 interface cable running to pins 9, 14, 18, 24, or 25 of the terminal port, your terminal screen will not display properly.

Modem Pin	Modem Signal	Aux. Pin	Aux. Signal
1	Shield Ground	1	Shield ground
2	Transmit Data	2	Receive Data from Printer (XON/XOFF only)
3	Receive Data	3	Transmit Data to Printer
4	Request to Send (held high)		
		6	Data Set Ready (held high)
7	Signal Ground	7	Signal Ground
8	Data Carrier Detect		
9			
14	**Leave disconnected**		
18			
20	Data Terminal Ready (DTR)	20	Printer Ready (DTR)
24			
25	**Leave disconnected**		

Auxiliary pin 20 must be active high when the printer is ready to receive data, and DTR handshaking has been selected.

ALTOS

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ALTOS III RELEASE NOTES

Thank you for purchasing an Altos III!. You will find this terminal to offer outstanding user features, configuration flexibility, and very attractive packaging.

Please notice that the cable running between the Altos III and the computer uses only 9 wires, although the connector provides for 25. The use of all 25 wires could affect performance of your terminal or computer. Hence, please insure any cable you use is RS232 based utilizing only Pins 1 through 8 and 20. The cable included with your Altos computer is built this way. Extras can be ordered from Altos or from any major computer supplies vendor.

The vast majority of Altos III users will find that the terminal easily attaches to the host computer and runs application software as soon as the terminal is unpacked. However, there are a few technical considerations you may need to be aware of, especially if you are a systems developer or if the Altos III is used as a direct plug replacement for Altos II, VT 100, or Televideo 910 terminals. These items are listed below:

1. The Altos III emulation of the Televideo 910 is a superset of the 910 characteristics. Features may be found in this mode which are not duplicated on the 910.

2. When the slave printer port is utilized, the media copy command, ESC [0, will print the entire screen. On the Altos II this command would print screen text only up to the cursor position.

   If you send a screen image to the printer while in "formatted print mode", a carraige return/linefeed/null sequence would normally be appended, but the Altos III only generates a carraige return/linefeed sequence.

   When the terminal is in "printer echo mode", the "stop transmission" command will not be trapped by the terminal and will be sent to the printer.

   Screen dumps send only the first column character to the last printed character of each line; remaining spaces are not sent.

3. A few application software packages utilize multiple screen attributes (undersocre, blink, reverse, etc.) simultaneously. Such packages will not perform adequately on the Altos III, although they would on the Altos II. No Altos named software utilizes multiple attributes, nor are there any known ASAP vendors who do.

4. When using the Altos III in ANSI emulation mode, the "," and "-" keys on the keypad are directly reversed in keyboard location and generated escape sequence from the Altos II configuration.

5. Always be sure that your Altos III is in full duplex mode when running the self test feature.

6. If the "set" cursor key mode is used, (during software development, for example), proper key codes are generated, but the screen cursor will not move.

7. Programmable function keys cannot be programmed while in local mode.

8. The smooth scroll feature can reach its limit if large amounts of data are fed in the screen too quickly. Holding the shift and reset buttons simultaneously will restore the terminal to normal operation. Also, the smooth scroll feature cannot be invoked through computer or program control.