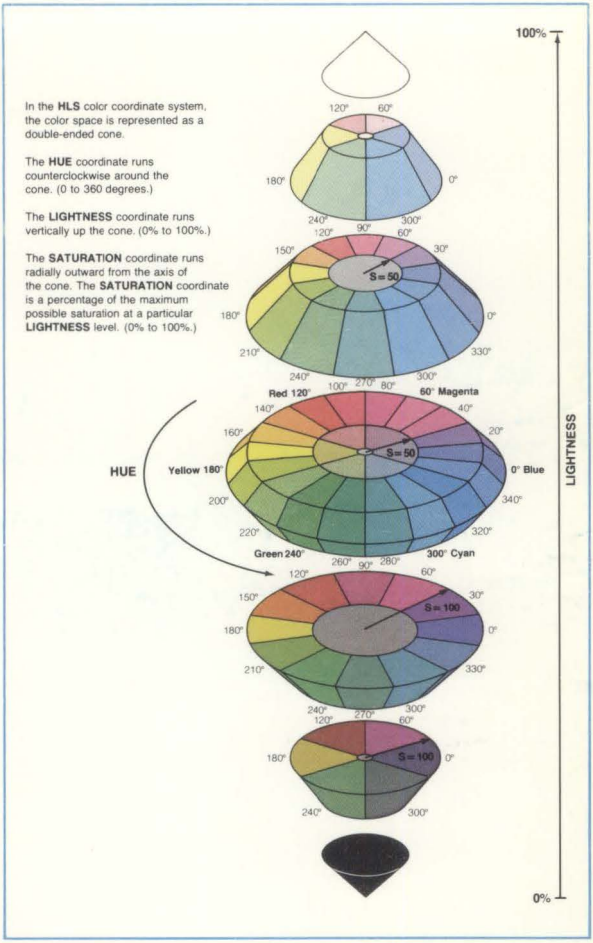
TEK REFERENCE GUIDE

4106
4107
4109
and
CX SERIES

COMPUTER DISPLAY TERMINALS

Tektronix®
COMMITTED TO EXCELLENCE

TEKTRONIX COLOR STANDARD



Manual Part No. 070-4892-02
Product Group 18

First Printing NOV 1983
Revised JUN 1985

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INTRODUCTION

This reference guide covers commands available on the Tektronix 4106, 4107, 4109, CX4106, CX4107, and CX4109 Computer Display Terminals. This reference guide supports Firmware Versions 1 and up, and includes the latest enhancements in the current version (Version 8).

(continued)

WHAT IS IN THIS REFERENCE GUIDE

Information you'll find in this guide includes:

- *Cross-Reference Lists* — Separate lists of commands grouped by function for each command set (ANSI, VT52, and 4100), a list of commands by opcode, a list of commands by Setup name, and a list of all the commands that can be saved in the terminal's nonvolatile memory.
- *Command Summaries* — Separate alphabetic listings of each command set, which give the host and Setup syntax for each command.
- *Report Summaries* — A brief description of the terminal reports that can be invoked with 4100-style commands.
- *Keyboard Layouts* — Illustrations that show key positions and macro numbers for each key on all keyboards available with the terminal.
- *Code Charts* — Charts that show the Supplementary and Rulings character sets, and an ASCII code chart (on the last page).
- *Color Specifications* — Illustrations of the HLS color cone (inside front cover) and the terminal's predefined fill patterns (inside back cover).

FOR OPERATORS

The Operators Manual packaged with your terminal provides tutorial information that introduces you to some of the commands available at the keyboard. This reference guide provides extensive cross-referencing of the terminal's commands and gives more details about how you enter them from the keyboard. In particular, there is more detailed information about the function of each command's parameters and about the valid values you can use for these parameters.

Although this guide shows the host and Setup syntax for all commands available on your terminal, you must use Setup syntax to enter commands from the keyboard. (The computer uses host syntax to send commands to your terminal.)

Generally, you'll be using this terminal to run specific programs on a host computer. If you have questions about the program you are using, consult the documentation that is supplied with it.

FOR PROGRAMMERS

This guide shows the host escape sequences and parameter values you can use to issue the terminal's commands from a host application. It does not include introductory or conceptual information about the commands, details about how commands interact, or details about the encoding schemes that you must use in sending parameter values from the host. This conceptual information and details of the commands' functions and interaction are provided in the Programmers Manual and the Programmers Supplement (see *Finding More Information*).

ABOUT THE 4106 AND CX4106

Keep in mind that the 4106 and CX4106 Terminals have less memory than the other terminals. In spite of their limited memory, the 4106 and CX4106 support all the commands described in this guide.

FINDING MORE INFORMATION

For more information about the capabilities of these terminals (including detailed discussions of the commands described in this guide), see the following manuals:

- *4106/4107/4109/CX Programmers Reference Manual* (part number 070-4893-01)
- *4106/4107/4109/CX Programmers Supplement* (part number 070-5273-00)

You can order these manuals through your local Tektronix Field Office.

ANSI COMMANDS BY FUNCTION

Command Name	Opcode[a]	Setup Name[b]
MOVING THE CURSOR		
$^{B}_{S}$ (Back Space)	$^{B}_{S}$	
$^{C}_{R}$ (Carriage Return)	$^{C}_{R}$	
CUB (Cursor Backward)	$^{E}_{C}$[. . . D	
CUD (Cursor Down)	$^{E}_{C}$[. . . B	
CUF (Cursor Forward)	$^{E}_{C}$[. . . C	
CUP (Cursor Position)	$^{E}_{C}$[. . . H	
CUU (Cursor Up)	$^{E}_{C}$[. . . A	
HVP (Horizontal and Vertical Position)	$^{E}_{C}$[. . . f	
$^{L}_{F}$ (Line Feed)	$^{L}_{F}$	
IND (Index)	$^{E}_{C}$D	
NEL (Next Line)	$^{E}_{C}$E	
RI (Reverse Index)	$^{E}_{C}$M	
DELETING CHARACTERS AND LINES		
DCH (Delete Character)	$^{E}_{C}$[. . . P	
DL (Delete Line)	$^{E}_{C}$[. . . M	
ERASING CHARACTERS AND LINES		
ECH (Erase Character)	$^{E}_{C}$[. . . X	
ED (Erase in Display)	$^{E}_{C}$[. . . J	
EL (Erase in Line)	$^{E}_{C}$[. . . K	
INSERTING CHARACTERS AND LINES		
ICH (Insert Character)	$^{E}_{C}$[. . . @	
IL (Insert Line)	$^{E}_{C}$[. . . L	
WORKING WITH TABULAR MATERIAL		
CBT (Cursor Backward Tab)	$^{E}_{C}$[. . . Z	
CHT (Cursor Horizontal Tab)	$^{E}_{C}$[. . . I	
$^{H}_{T}$ (Horizontal Tab)	$^{H}_{T}$	
HTS (Horizontal Tab Set)	$^{E}_{C}$H	
TBC (Tab Clear)	$^{E}_{C}$[. . . g	
$^{V}_{T}$ (Vertical Tab)	$^{V}_{T}$	
RESTORING OPERATING CHARACTERISTICS		
RIS (Reset to Initial State)	$^{E}_{C}$c	
TEKRC (Restore Cursor)	$^{E}_{C}$8	
TEKSC (Save Cursor)	$^{E}_{C}$7	
CANCELING ANSI COMMANDS		
$^{C}_{N}$ (Cancel)	$^{C}_{N}$	
$^{S}_{B}$ (Substitute)	$^{S}_{B}$	

[a] **Some ANSI commands require parameters; three dots (. . .) show where the parameters belong.**

[b] **For Setup syntax, we've given the parameter keyword where appropriate — otherwise, three dots (. . .) indicate that there is a choice of values.**

Command Name	Opcode[a]	Setup Name[b]
SCROLLING THE DIALOG AREA		
SD (Scroll Down)	^E^C[. . . T	
SL (Scroll Left)	^E^C[. . . ^S^P@	
SR (Scroll Right)	^E^C[. . . ^S^PA	
SU (Scroll Up)	^E^C[. . . S	
CONTROLLING THE DIALOG AREA DISPLAY		
Autowrap Mode		
(RM command)	^E^C[?7l	AUTOWRAP NO
(SM command)	^E^C[?7h	AUTOWRAP YES
Column Mode		
(RM command)	^E^C[?3l	COLUMNMODE 80
(SM command)	^E^C[?3h	COLUMNMODE 132
Insert/Replace Mode		
(RM command)	^E^C4l	INSERTREPLACE REPLACE
(SM command)	^E^C4h	INSERTREPLACE INSERT
Linefeed/Newline Mode		
(RM command)	^E^C20l	LFCR NO
(SM command)	^E^C20h	LFCR YES
Origin Mode		
(RM command)	^E^C[?6l	ORIGINMODE ABSOLUTE
(SM command)	^E^C[?6h	ORIGINMODE RELATIVE
Overstrike/Replace Mode		
(RM command)	^E^C[<1l	DAMODE REPLACE
(SM command)	^E^C[<1h	DAMODE OVERSTRIKE
Screen Mode		
(RM command)	^E^C[?5l	SCREENMODE NORMAL
(SM command)	^E^C[?5h	SCREENMODE REVERSE
Send/Receive Mode		
(RM command)	^E^C[12l	ECHO YES
(SM command)	^E^C[12h	ECHO NO
SCS (Select Character Set)		
G0 character set	^E^C(. . .	SELECTCHARSET G0 . . .
G1 character set	^E^C) . . .	SELECTCHARSET G1 . . .
SGR (Select Graphics Rendition)	^E^C[. . . m	TEXTRENDITION . . .
^S^I (Shift In)	^S^I	
^S^O (Shift Out)	^S^O	
TEKDHL (Double Height Line)		
Top half	^E^C#3	
Bottom half	^E^C#4	
TEKDWL (Double Width Line)	^E^C#6	
TEKSWL (Single Width Line)	^E^C#5	
TEKSTBM (Set Top and Bottom Margins)	^E^C[. . . r	EDITMARGINS . . .
MAKING COPIES		
^F^F (Form Feed)	^F^F	
MC (Media Copy)	^E^C[. . . i	AUTOPRINT . . .

[a] Some ANSI commands require parameters; three dots (. . .) show where the parameters belong.

[b] For Setup syntax, we've given the parameter keyword where appropriate — otherwise, three dots (. . .) indicate that there is a choice of values.

ANSI COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[b]
CONTROLLING THE KEYBOARD		
Autorepeat Mode		
(RM command)	ESC[?8l	AUTOREPEAT NO
(SM command)	ESC[?8h	AUTOREPEAT YES
Cursor Keys Mode		
(RM command)	ESC[?1l	CURSORKEYMODE NO
(SM command)	ESC[?1h	CURSORKEYMODE YES
DMI (Disable Manual Input)	ESC^	
EMI (Enable Manual Input)	ESCb	
Keyboard Action Mode		
(RM command)	ESC[2l	
(SM command)	ESC[2h	
TEKKPAM (Keypad Application Mode)	ESC=	KEYPADMODE APPLICATION
TEKKPNM (Keypad Numeric Mode)	ESC>	KEYPADMODE NUMERIC
SETTING MODES		
ANSI-to-VT52 Mode		
(RM command)	ESC[?2l	CODE VT52
SELECT CODE	ESC%! . . .	CODE . . .
REPORTING TO THE HOST		
CPR (Cursor Position Report)	ESC[. . . R	
DSR (Device Status Report)	ESC[. . . n	
DA (Device Attributes)	ESC[0c	
ENQ (Enquiry)	ESCQ	
REPORT SYNTAX MODE	ESC#!0	
TEKID (Identify Terminal)	ESCZ	

CONTROL CHARACTERS

BL (Bell)
BS (Backspace)
CN (Cancel)
CR (Carriage Return)
EQ (Enquiry)
FF (Form Feed)
HT (Horizontal Tab)
LF (Line Feed)
SB (Substitute)
SI (Shift In)
SO (Shift Out)
VT (Vertical Tab)

[a] Some ANSI commands require parameters; three dots (. . .) show where the parameters belong.

[b] For Setup syntax, we've given the parameter keyword where appropriate — otherwise, three dots (. . .) indicate that there is a choice of values.

VT52 COMMANDS BY FUNCTION

Command Name	Opcode[a]	Setup Name[b]
MOVING THE CURSOR		
CURSOR DOWN	ESC B	
CURSOR LEFT	ESC D	
CURSOR RIGHT	ESC C	
CURSOR TO HOME	ESC H	
CURSOR UP	ESC A	
DIRECT CURSOR ADDRESS	ESC Y . . .	
REVERSE LINEFEED	ESC I	
ERASING TEXT		
ERASE TO END OF LINE	ESC K	
ERASE TO END OF SCREEN	ESC J	
SETTING MODES		
ENTER ANSI MODE	ESC <	CODE ANSI
SELECT CODE	ESC %! . . .	CODE . . .
SELECTING VT52 SUBMODES		
ENTER ALTERNATE KEYPAD MODE	ESC =	KEYPADMODE APPLICATION
ENTER GRAPHICS MODE	ESC F	
EXIT ALTERNATE KEYPAD MODE	ESC >	KEYPADMODE NUMERIC
EXIT GRAPHICS MODE	ESC G	
REPORTING TO THE HOST		
ENQUIRY	ESC Q	
IDENTIFY	ESC Z	
REPORT SYNTAX MODE	ESC #!0	

[a] Some commands require parameters; three dots (. . .) show where the parameters belong.

[b] Parameters for Setup always follow the Setup name; we've given the parameter keyword where appropriate — otherwise, three dots (. . .) indicate that there is a choice of values.

4100-STYLE COMMANDS BY FUNCTION

Here are the functional categories you'll find in this listing (in the order listed):

4100-STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
ALPHATEXT		
ENABLE DIALOG AREA	^[E]c**KA**	**DAE**NABLE
ENTER ALPHA MODE	^[U]S	(none)
SET 4014 ALPHATEXT SIZE	^[E]c**8** or ^[E]c**9** or ^[E]c**:** or ^[E]c**;**	(none)
SET ALPHATEXT FONT	^[E]c**S**1 or ^[E]c**S**0	(none)
SET GRAPHICS AREA WRITING MODE	^[E]c**MG**	**GA**MODE
SET TEXT INDEX	^[E]c**MT**	**GTI**NDEX
COLOR		
Controlling Graphics Area Color		
SELECT FILL PATTERN	^[E]c**MP**	**FIL**LPATTERN
SET ALPHA CURSOR INDICES	^[E]c**TD**	**A**CURSOR
SET BACKGROUND COLOR	^[E]c**TB**	**CB**ACKGROUND
SET BACKGROUND INDICES	^[E]c**MB**	**BAC**KINDEX
SET COLOR MODE	^[E]c**TM**	**CMO**DE
SET GIN CURSOR COLOR	^[E]c**TC**	**G**CURSOR
SET LINE INDEX	^[E]c**ML**	**LINE**INDEX
SET SURFACE COLOR MAP	^[E]c**TG**	**CMA**P
SET TEXT INDEX	^[E]c**MT**	**GTI**NDEX
SET VIEW ATTRIBUTES	^[E]c**RA**	**VA**TTRIBUTES
Controlling Dialog Area Color		
BASE COLOR[c]	(none)	**BAS**ECOLOR
SET ALPHA CURSOR INDICES	^[E]c**TD**	**A**CURSOR
SET DIALOG AREA COLOR MAP	^[E]c**TF**	**DAC**MAP
SET DIALOG AREA INDEX	^[E]c**LI**	**DAI**NDEX
COMMAND SETTINGS		
Reporting Command Settings		
REPORT SYNTAX MODE	^[E]c**#!0**	(none)
REPORT TERMINAL SETTINGS	^[E]c**IQ**	(none)
STATUS	(none)	**STA**TUS
Resetting Command Settings		
FACTORY	(none)	**FA**CTORY
RESET	^[E]c**KV**	**RE**SET
Saving Command Settings		
SAVE NONVOLATILE PARAMETERS	^[E]c**KU**	**NV**SAVE

[a] In 4100-style commands, parameters always follow the opcode or Setup name. See command descriptions for placement and values.

[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]

COMMUNICATIONS: HOST PORT

Selecting Host Port

HOST PORT[c]	(none)	**HO**STPORT

Establishing RS-232 Communications

IGNORE DELETES	E_C**KI**	**IG**NOREDEL
SET ANSWERBACK STRING	(none)	**AN**SWERBACK
SET BAUD RATES	E_C**NR**	**BAU**DRATE
SET BREAK TIME	E_C**NK**	**BR**EAKTIME
SET BYPASS CANCEL CHARACTER	E_C**NU**	**BY**PASSCANCEL
SET ECHO	E_C**KE**	**EC**HO
SET EOF STRING	E_C**NE**	**EOF**STRING
SET EOL STRING	E_C**NT**	**EOL**STRING
SET EOM CHARACTERS	E_C**NC**	**EOM**CHARS
SET ERROR THRESHOLD	E_C**KT**	**ER**RORLEVEL
SET FLAGGING MODE	E_C**NF**	**FL**AGGING
SET PARITY	E_C**NP**	**PAR**ITY
SET PROMPT STRING	E_C**NS**	**PROMPTS**TRING
SET QUEUE SIZE	E_C**NQ**	QUEUESIZE
SET REPORT EOM FREQUENCY	E_C**IM**	**REO**M
SET REPORT MAXIMUM LINE LENGTH	E_C**IL**	**RL**INELENGTH
SET STOP BITS	E_C**NB**	**STO**PBITS
SET TRANSMIT DELAY	E_C**ND**	**XMTD**ELAY
SET TRANSMIT RATE LIMIT	E_C**NL**	**XMTL**IMIT

Controlling RS-232 Communications

CANCEL	E_C**KC**	(none)
ENTER BYPASS MODE	E_CC_N	(none)
PROMPT MODE	E_C**NM**	**PROMPTM**ODE

Establishing COAX Communications

HOST PORT[c]	(none)	**HO**STPORT
SET ERROR THRESHOLD	E_C**KT**	**ER**RORLEVEL
TEK HEADER CHARACTER[c]	E_C**OI**	**TE**KHEADER
TRANSLATION METHOD[c]	(none)	**TM**ETHOD

COMMUNICATIONS: PERIPHERAL PORTS

Controlling the COPIER Port

SELECT HARDCOPY INTERFACE	E_C**QD**	**HC**INTERFACE
SET HARDCOPY MONOCHROME ATTRIBUTES	E_C**QE**	**HCMO**NOCHROME

Controlling the 2PPI Ports

PORT ASSIGN	E_C**PA**	**PA**SSIGN
REPORT PORT STATUS	E_C**PQ**	(none)
SET PORT BAUD RATE	E_C**PR**	**PBA**UD
SET PORT EOF STRING	E_C**PE**	**PE**OF
SET PORT FLAGGING MODE	E_C**PF**	**PF**LAG
SET PORT PARITY	E_C**PP**	**PP**ARITY
SET PORT STOP BITS	E_C**PB**	**PB**ITS

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

4100 STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
COPIES		
Making Copies		
CANCEL	$^{E}_{C}$**KC**	(none)
COPY	$^{E}_{C}$**JC**	**COPY**
HARDCOPY	$^{E}_{C}$**KH**	(none)
PLOT	$^{E}_{C}$**PL**	**PLOT**
SAVE	$^{E}_{C}$**JV**	**SAVE**
PORT COPY	$^{E}_{C}$**PC**	**PCOPY**
4010 HARDCOPY	$^{E}_{C}$$^{E}_{B}$	(none)
Setting Color Copy Attributes: 2PPI Ports		
MAP INDEX TO PEN	$^{E}_{C}$**PI**	**PMAP**
SELECT HARDCOPY INTERFACE	$^{E}_{C}$**QD**	**HCI**NTERFACE
SET PORT BLACK WHITE INVERSION	$^{E}_{C}$**PJ**	**PI**NVERSION
SET PORT IMAGE ORIENTATION	$^{E}_{C}$**PO**	**PO**RIENT
SET PORT NUMBER OF COPIES	$^{E}_{C}$**PN**	**PC**OPIES
Setting Color Copy Attributes: COPIER Port		
SELECT COLOR HARDCOPY IMAGE DENSITY	$^{E}_{C}$**QU**	**HCDE**NSITY
SELECT HARDCOPY INTERFACE	$^{E}_{C}$**QD**	**HCI**NTERFACE
SET COLOR COPIER DATA RESOLUTION	$^{E}_{C}$**QB**	**HCDAT**ARES
SET COLOR COPIER REPAINT	$^{E}_{C}$**QT**	**HCR**EPAINT
SET COPY SIZE	$^{E}_{C}$**QA**	**HCS**IZE
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$**QL**	**HCDAA**TTRIB
SET IMAGE ORIENTATION	$^{E}_{C}$**QO**	**HCO**RIENT
Setting Monochrome Copy Attributes: COPIER Port		
MAP INDEX TO PRINT	$^{E}_{C}$**QI**	**HCMA**P
SET COPY SIZE	$^{E}_{C}$**QA**	**HCS**IZE
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$**QL**	**HCDAA**TTRIB
SET HARDCOPY MONOCHROME ATTRIBUTES	$^{E}_{C}$**QE**	**HCMO**NOCHROME
SET IMAGE ORIENTATION	$^{E}_{C}$**QO**	**HCO**RIENT

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]
CURVES		
DRAW CURVE	^EcUC	**CURV**E
SET CURVE SMOOTHNESS	^EcUG	**CS**MOOTH
CX COMMANDS (CX Series Only)		
BASE COLOR[c]	(none)	**BAS**ECOLOR
CAPITALS[c]	(none)	**CAP**ITALS
CLICK[c]	(none)	**CLI**CK
CX KEYPAD[c]	(none)	**CX**KEYPAD
HOST PORT[c]	(none)	**HO**STPORT
TEK HEADER CHARACTER[c]	^EcOI	**TE**KHEADER
TRANSLATION METHOD[c]	(none)	**TM**ETHOD
DIALOG AREA		
Controlling the Dialog Area		
BASE COLOR[c]	(none)	**BAS**ECOLOR
CLEAR DIALOG SCROLL	^EcLZ	**CLE**ARDIALOG
CURSOR TYPE	(none)	**CURSOR**TYPE
ENABLE DIALOG AREA	^EcKA	**DAE**NABLE
SET ALPHA CURSOR INDICES	^EcTD	**AC**URSOR
SET DIALOG AREA BUFFER SIZE	^EcLB	**DAB**UFFER
SET DIALOG AREA COLOR MAP	^EcTF	**DAC**MAP
SET DIALOG AREA HARDCOPY ATTRIBUTES	^EcQL	**HCDAA**TTRIB
SET DIALOG AREA INDEX	^EcLI	**DAI**NDEX
SET DIALOG AREA LINES	^EcLL	**DAL**INES
SET DIALOG AREA VISIBILITY	^EcLV	**DAV**ISIBILITY
SET DIALOG AREA WRITING MODE	^EcLM	**DAM**ODE
Controlling Text in the Dialog Area		
CAPITALS[c]	(none)	**CAP**ITALS
CRLF	^EcKR	**CR**LF
LFCR	^EcKF	**LF**CR
SET ECHO	^EcKE	**EC**HO
SET EDIT CHARACTERS	^EcKZ	**EDIT**CHARS
SET SNOOPY MODE	^EcKS	**S**NOOPY

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

4100 STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
GIN (GRAPHICS INPUT)		
Enabling and Disabling GIN		
DISABLE GIN	^[E]cID	**GIND**ISABLE
ENABLE GIN	^[E]cIE	**GINE**NABLE
ENABLE 4010 GIN	^[E]c^[S]B	(none)
Setting GIN Display Characteristics		
SET GIN AREA	^[E]cIV	**GINA**REA
SET GIN CURSOR	^[E]cIC	**GINC**URSOR
SET GIN CURSOR COLOR	^[E]cTC	**G**CURSOR
SET GIN CURSOR SPEED	^[E]cIJ	**G**SPEED
SET GIN DISPLAY START POINT	^[E]cIX	**GINS**TARTPOINT
SET GIN GRIDDING	^[E]cIG	**GING**RIDDING
SET GIN INKING	^[E]cII	**GINI**NKING
SET GIN RUBBERBANDING	^[E]cIR	**GINR**UBBERBAND
SET GIN WINDOW	^[E]cIW	**GINW**INDOW
SET PICK APERTURE	^[E]cIA	**GINP**ICKAPERTURE
Controlling GIN Reports		
SET BYPASS CANCEL CHARACTER	^[E]cNU	**BY**PASSCANCEL
SET EOL STRING	^[E]cNT	**EOL**STRING
SET EOM CHARACTERS	^[E]cNC	**EOM**CHARS
SET ERROR THRESHOLD	^[E]cKT	**ERR**ORLEVEL
SET GIN REPORT FORMAT	^[E]cIK	**GINRE**PORT
SET GIN STROKE FILTERING	^[E]cIF	**GINF**ILTERING
SET REPORT EOM FREQUENCY	^[E]cIM	**REO**M
SET REPORT MAXIMUM LINE LENGTH	^[E]cIL	**RL**INELENGTH
SET REPORT SIGNATURE CHARACTERS	^[E]cIS	**RS**IGCHARS
SET TABLET HEADER CHARACTERS	^[E]cIH	**GINSH**EADERCHARS

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]
GRAPHICS PRIMITIVES		
Alphatext		
ENABLE DIALOG AREA	^{E}cKA	**DA**ENABLE
ENTER ALPHA MODE	^{U}S	(none)
SET 4014 ALPHATEXT SIZE	^{E}c8 or ^{E}c9 or ^{E}c: or ^{E}c;	(none)
SET ALPHATEXT FONT	^{E}c^{S}I or ^{E}c^{S}O	(none)
SET GRAPHICS AREA WRITING MODE	^{E}cMG	**GA**MODE
SET TEXT INDEX	^{E}cMT	**GTI**NDEX
Curves		
DRAW CURVE	^{E}cUC	**CUR**VE
SET CURVE SMOOTHNESS	^{E}cUG	**CS**MOOTH
Graphtext		
BEGIN GRAPHTEXT CHARACTER	^{E}cST	**GTB**EGIN
DELETE GRAPHTEXT CHARACTER	^{E}cSZ	**GTD**ELETE
END GRAPHTEXT CHARACTER	^{E}cSU	**GTE**ND
GRAPHIC TEXT	^{E}cLT	**GTE**XT
SET GRAPHICS AREA WRITING MODE	^{E}cMG	**GA**MODE
SET GRAPHTEXT CHARACTER PATH	^{E}cMN	**GTPA**TH
SET GRAPHTEXT FONT	^{E}cMF	**GTF**ONT
SET GRAPHTEXT FONT GRID	^{E}cSG	**GTG**RID
SET GRAPHTEXT PRECISION	^{E}cMQ	**GTPR**ECISION
SET GRAPHTEXT ROTATION	^{E}cMR	**GTR**OTATION
SET GRAPHTEXT SIZE	^{E}cMC	**GTS**IZE
SET GRAPHTEXT SLANT	^{E}cMA	**GTSL**ANT
SET TEXT INDEX	^{E}cMT	**GTI**NDEX
Lines		
DRAW	^{E}cLG	**DR**AW
ENTER VECTOR MODE	^{G}S	(none)
MOVE	^{E}cLF	**MO**VE
SET 4014 LINE STYLE	^{E}c . . .	(none)
SET LINE INDEX	^{E}cML	**LINE**INDEX
SET LINE STYLE	^{E}cMV	**LINE**STYLE
Markers		
DRAW MARKER	^{E}cLH	**MARKER**
ENTER MARKER MODE	^{F}S	(none)
SET GRAPHICS AREA WRITING MODE	^{E}cMG	**GA**MODE
SET MARKER TYPE	^{E}cMM	**MARKER**TYPE
Panels		
BEGIN PANEL BOUNDARY	^{E}cLP	**BE**GINPANEL
END PANEL	^{E}cLE	**EN**DPANEL
SELECT FILL PATTERN	^{E}cMP	**FIL**LPATTERN

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

4100 STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
GRAPHTEXT		
BEGIN GRAPHTEXT CHARACTER	Ec**ST**	**GTB**EGIN
DELETE GRAPHTEXT CHARACTER	Ec**SZ**	**GTD**ELETE
END GRAPHTEXT CHARACTER	Ec**SU**	**GTE**ND
GRAPHIC TEXT	Ec**LT**	**GTEX**T
SET GRAPHICS AREA WRITING MODE	Ec**MG**	**GA**MODE
SET GRAPHTEXT CHARACTER PATH	Ec**MN**	**GTPA**TH
SET GRAPHTEXT FONT	Ec**MF**	**GTF**ONT
SET GRAPHTEXT FONT GRID	Ec**SG**	**GTG**RID
SET GRAPHTEXT PRECISION	Ec**MQ**	**GTPR**ECISION
SET GRAPHTEXT ROTATION	Ec**MR**	**GTR**OTATION
SET GRAPHTEXT SIZE	Ec**MC**	**GTSI**ZE
SET GRAPHTEXT SLANT	Ec**MA**	**GTSL**ANT
SET TEXT INDEX	Ec**MT**	**GTI**NDEX
HELP		
HELP	(none)	**HE**LP
STATUS	(none)	**STA**TUS
KEYBOARD		
CANCEL	Ec**KC**	(none)
CLICK[c]	(none)	**CL**ICK
CX KEYPAD[c]	(none)	**CX**KEYPAD
ENABLE KEY EXPANSION	Ec**KW**	**KEYEXP**AND
LOCAL	(none)	**LOCA**L
LOCK KEYBOARD	Ec**KL**	(none)
LOCK VIEWING KEYS	Ec**RJ**	**LOCK**VIEWINGKEYS
SET TAB STOPS	Ec**KB**	**TA**BS
LINES		
DRAW	Ec**LG**	**DR**AW
ENTER VECTOR MODE	G**S**	(none)
MOVE	Ec**LF**	**MO**VE
SET 4014 LINE STYLE	E**c**	(none)
SET LINE INDEX	Ec**ML**	**LINEI**NDEX
SET LINE STYLE	Ec**MV**	**LINES**TYLE

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]
MACROS		
DEFINE MACRO	$^{E}_{C}$**KD**	**DE**FINE
DEFINE NONVOLATILE MACRO	$^{E}_{C}$**KO**	**NV**DEFINE
ENABLE KEY EXPANSION	$^{E}_{C}$**KW**	**KEYEXP**AND
EXPAND MACRO	$^{E}_{C}$**KX**	**EX**PAND
LEARN	(none)	**LE**ARN
LEARN NONVOLATILE	(none)	**NV**LEARN
MACRO STATUS	(none)	**MAC**ROSTATUS
SAVE NONVOLATILE PARAMETERS	$^{E}_{C}$**KU**	**NV**SAVE
SET KEY EXECUTE CHARACTER	$^{E}_{C}$**KY**	**KEYEXC**HAR
MARKERS		
DRAW MARKER	$^{E}_{C}$**LH**	**MARKER**
ENTER MARKER MODE	$^{F}_{S}$	(none)
SET GRAPHICS AREA WRITING MODE	$^{E}_{C}$**MG**	**GA**MODE
SET MARKER TYPE	$^{E}_{C}$**MM**	**MARKER**TYPE
MODES		
Selecting Host Command Modes		
SELECT CODE	$^{E}_{C}$**%!**	**CO**DE
Selecting Implicit Command Modes		
CANCEL	$^{E}_{C}$**KC**	(none)
ENTER ALPHA MODE	$^{U}_{S}$	(none)
ENTER BYPASS MODE	$^{E}_{C}$**C**$_{N}$	(none)
ENTER MARKER MODE	$^{F}_{S}$	(none)
ENTER VECTOR MODE	$^{G}_{S}$	(none)
PANELS		
BEGIN PANEL BOUNDARY	$^{E}_{C}$**LP**	**BE**GINPANEL
END PANEL	$^{E}_{C}$**LE**	**EN**DPANEL
SELECT FILL PATTERN	$^{E}_{C}$**MP**	**FIL**LPATTERN
PIXEL OPERATIONS		
Transfering Data		
PIXEL COPY	$^{E}_{C}$**RX**	**PX**COPY
RASTER WRITE	$^{E}_{C}$**RP**	**PXRA**STER
RECTANGLE FILL	$^{E}_{C}$**RR**	**PXRE**CTANGLE
RUNLENGTH WRITE	$^{E}_{C}$**RL**	**PXRU**NLENGTH
Initializing Pixel Operations		
BEGIN PIXEL OPERATIONS	$^{E}_{C}$**RU**	**PXBE**GIN
SET PIXEL BEAM POSITION	$^{E}_{C}$**RH**	**PXPO**SITION
SET PIXEL VIEWPORT	$^{E}_{C}$**RS**	**PXVI**EWPORT

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

4100 STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
REPORTS		
Requesting Reports		
ENQUIRY	^{E}Q	(none)
REPORT DEVICE STATUS	^{E}cJQ	(none)
REPORT ERRORS	^{E}cKQ	(none)
REPORT GIN POINT	^{E}cIP	(none)
REPORT PORT STATUS	^{E}cPQ	(none)
REPORT SEGMENT STATUS	^{E}cSQ	(none)
REPORT SYNTAX MODE	$^{E}c\#!0$	(none)
REPORT TERMINAL SETTINGS	^{E}cIQ	(none)
REPORT 4010 STATUS	$^{E}c^{E}Q$	(none)
Controlling Reports		
SET BYPASS CANCEL CHARACTER	^{E}cNU	**BY**PASSCANCEL
SET EOL STRING	^{E}cNT	**EOL**STRING
SET EOM CHARACTERS	^{E}cNC	**EOM**CHARS
SET ERROR THRESHOLD	^{E}cKT	**ER**RORLEVEL
SET GIN REPORT FORMAT	^{E}cIK	**GINRE**PORT
SET GIN STROKE FILTERING	^{E}cIF	**GINF**ILTERING
SET REPORT EOM FREQUENCY	^{E}cIM	**REO**M
SET REPORT MAXIMUM LINE LENGTH	^{E}cIL	**RL**INELENGTH
SET REPORT SIGNATURE CHARACTERS	^{E}cIS	**RS**IGCHARS
SET TABLET HEADER CHARACTERS	^{E}cIH	**GINSH**EADERCHARS
SCREEN DIMMING		
DIM ENABLE	^{E}cKG	**DIM**
SECURITY		
ENQUIRY	^{E}Q	(none)
ENTER BYPASS MODE	$^{E}c^{C}N$	(none)
SET ANSWERBACK STRING	(none)	**A**NSWERBACK
SET ECHO	^{E}cKE	**E**CHO

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]
SEGMENTS		
Defining Segments		
BEGIN HIGHER SEGMENT	E_C**SN**	**SGUP**
BEGIN LOWER SEGMENT	E_C**SB**	**SGDOWN**
BEGIN NEW SEGMENT	E_C**SE**	**SGNEW**
BEGIN SEGMENT	E_C**SO**	**SGOPEN**
CALL SEGMENT	E_C**SF**	**SGCALL**
END SEGMENT	E_C**SC**	**SGCLOSE**
INCLUDE COPY OF SEGMENT	E_C**LK**	**SGINCLUDE**
SET PICK ID	E_C**MI**	**SGPICKID**
SET PIVOT POINT	E_C**SP**	**SGPIVOT**
Saving Segment Definitions		
PLOT	E_C**PL**	**PLOT**
SAVE	E_C**JV**	**SAVE**
Displaying Segments		
RENEW VIEW	E_C**KN**	**RENEW**
SET FIXUP LEVEL	E_C**RF**	**FIXUP**
SET SEGMENT VISIBILITY	E_C**SV**	**SGVISIBILITY**
SET SEGMENT WRITING MODE	E_C**SM**	**SGMODE**
Transforming Segments		
SET SEGMENT IMAGE TRANSFORM	E_C**SI**	**SGTRANSFORM**
SET SEGMENT POSITION	E_C**SX**	**SGPOSITION**
SET SEGMENT SCALE ROTATE	E_C**SJ**	**SGSCALEROTATE**
Setting Segment Attributes		
SET SEGMENT CLASS	E_C**SA**	**SGCLASS**
SET SEGMENT DETECTABILITY	E_C**SD**	**SGDETECT**
SET SEGMENT DISPLAY PRIORITY	E_C**SS**	**SGPRIORITY**
SET SEGMENT HIGHLIGHTING	E_C**SH**	**SGHIGHLIGHT**
SET SEGMENT VISIBILITY	E_C**SV**	**SGVISIBILITY**
Assigning Segment Classes		
SET CURRENT MATCHING CLASS	E_C**SL**	**SGMATCHINGCLASS**
SET SEGMENT CLASS	E_C**SA**	**SGCLASS**
Editing Segments		
DELETE PART OF SEGMENT	E_C**UD**	**SGREMOVE**
DELETE SEGMENT	E_C**SK**	**SGDELETE**
INSERT INTO SEGMENT	E_C**UI**	**SGINSERT**
RENAME SEGMENT	E_C**SR**	**SGRENAME**
REPLACE PART OF SEGMENT	E_C**UE**	**SGREPLACE**
SET SEGMENT EDIT MODE	E_C**UH**	**SGEDIT**
Reporting Segment Attributes to the Host		
REPORT SEGMENT STATUS	E_C**SQ**	(none)

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

4100 STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
SURFACES		
SELECT VIEW	^[E]cRC	**VS**ELECT
SET BACKGROUND COLOR	^[E]cTB	**CB**ACKGROUND
SET BACKGROUND INDICES	^[E]cMB	**BAC**KINDEX
SET SURFACE COLOR MAP	^[E]cTG	**CMA**P
SET SURFACE DEFINITIONS	^[E]cRD	**SD**EFINITIONS
SET SURFACE PRIORITIES	^[E]cRN	**SP**RIORITIES
SET SURFACE VISIBILITY	^[E]cRI	**SV**ISIBILITY
SET VIEW ATTRIBUTES	^[E]cRA	**VA**TTRIBUTES
TEXT		
Displaying Alphatext		
CAPITALS[c]	(none)	**CAP**ITALS
ENTER ALPHA MODE	^[U]S	(none)
SET 4014 ALPHATEXT SIZE	^[E]c8 or ^[E]c9 or ^[E]c: or ^[E]c;	(none)
SET ALPHATEXT FONT	^[E]c^[S]I or ^[E]c^[S]O	(none)
SET TEXT INDEX	^[E]cMT	**GTI**NDEX
Displaying Graphtext		
GRAPHIC TEXT	^[E]cLT	**GTE**XT
SET GRAPHICS AREA WRITING MODE	^[E]cMG	**GA**MODE
SET GRAPHTEXT CHARACTER PATH	^[E]cMN	**GTPA**TH
SET GRAPHTEXT FONT	^[E]cMF	**GTF**ONT
SET GRAPHTEXT PRECISION	^[E]cMQ	**GTPR**ECISION
SET GRAPHTEXT ROTATION	^[E]cMR	**GTR**OTATION
SET GRAPHTEXT SIZE	^[E]cMC	**GTSI**ZE
SET GRAPHTEXT SLANT	^[E]cMA	**GTSL**ANT
SET TEXT INDEX	^[E]cMT	**GTI**NDEX
Defining Graphtext Characters		
BEGIN GRAPHTEXT CHARACTER	^[E]cST	**GTB**EGIN
DELETE GRAPHTEXT CHARACTER	^[E]cSZ	**GTD**ELETE
END GRAPHTEXT CHARACTER	^[E]cSU	**GTE**ND
SET GRAPHTEXT FONT GRID	^[E]cSG	**GTG**RID

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[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

Command Name	Opcode[a]	Setup Name[a,b]
VIEWS		
Controlling Multiple Views		
DELETE VIEW	$^{E}_{C}$**RK**	**V**DELETE
PAGE	$^{E}_{C}$**F**$_{F}$	(none)
RENEW VIEW	$^{E}_{C}$**KN**	**REN**EW
SELECT VIEW	$^{E}_{C}$**RC**	**VS**ELECT
SET BORDER VISIBILITY	$^{E}_{C}$**RE**	**BO**RDER
SET VIEW ATTRIBUTES	$^{E}_{C}$**RA**	**VA**TTRIBUTES
SET VIEW DISPLAY CLUSTER	$^{E}_{C}$**RQ**	**VC**LUSTER
SET VIEWPORT	$^{E}_{C}$**RV**	**VI**EWPORT
SET WINDOW	$^{E}_{C}$**RW**	**W**INDOW
Using Zoom and Pan		
LOCK VIEWING KEYS	$^{E}_{C}$**RJ**	**LOCK**VIEWINGKEYS
SET WINDOW	$^{E}_{C}$**RW**	**W**INDOW

[a] In 4100-style commands, parameters always follow the opcode or Setup name. See command descriptions for placement and values.

[b] Setup names can be truncated to the characters shown in bold. See command descriptions for parameter placement and values.

[c] CX Series only.

COMMANDS BY OPCODE

Note that opcodes are listed according to their ADE (ASCII decimal equivalent) values, with lowest values first. Thus, $^{E}_{Q}$ (ADE 5) precedes $^{B}_{L}$ (ADE 7), and uppercase characters precede lowercase characters — for example, *Z* (ADE 90) precedes *a* (ADE 97).

Opcode	Syntax Mode[a]	Command Name
$^{E}_{Q}$	T A V	ENQUIRY
$^{B}_{L}$	T A V	Bell character
$^{B}_{S}$	T A V	Backspace character
$^{H}_{T}$	A	Horizontal Tab character
$^{L}_{F}$	T A V	Line Feed character
$^{V}_{T}$	T A V	Vertical Tab character
$^{F}_{F}$	A	Form Feed character
$^{C}_{R}$	T A V	Carriage Return character
$^{S}_{O}$	A	Shift Out character
$^{S}_{I}$	A	Shift In character
$^{D}_{1}$	T A V	XON (Flagging)
$^{D}_{3}$	T A V	XOFF (Flagging)
$^{C}_{N}$	A	Cancel character
$^{S}_{B}$	A	Substitute character
$^{E}_{C}$	T A V	Escape character
$^{E}_{C}{}^{E}_{Q}$	T	REPORT 4010 STATUS
$^{E}_{C}{}^{F}_{F}$	T	PAGE
$^{E}_{C}{}^{E}_{B}$	T	4010 HARDCOPY
$^{E}_{C}{}^{S}_{I}$	T	SET ALPHATEXT FONT (Selects G0)
$^{E}_{C}{}^{S}_{O}$	T	SET ALPHATEXT FONT (Selects G1)
$^{E}_{C}{}^{C}_{N}$	T	ENTER BYPASS MODE
$^{E}_{C}{}^{S}_{B}$	T	ENABLE 4010 GIN
$^{E}_{C}$#!0	T A V	REPORT SYNTAX MODE
$^{E}_{C}$#3	A	TEKDHL (Double Height Line) (Top Half)
$^{E}_{C}$#4	A	TEKDHL (Double Height Line) (Bottom Half)
$^{E}_{C}$#5	A	TEKSWL (Single Width Line)
$^{E}_{C}$#6	A	TEKDWL (Double Width Line)
$^{E}_{C}$%!	T A V	SELECT CODE
$^{E}_{C}$(	A	SCS (Select Character Set) (Assigns G0)
$^{E}_{C}$)	A	SCS (Select Character Set) (Assigns G1)
$^{E}_{C}$7	A	TEKSC (Save Cursor)
$^{E}_{C}$8	A	TEKRC (Restore Cursor)
	T	SET 4014 ALPHATEXT SIZE
$^{E}_{C}$9	T	SET 4014 ALPHATEXT SIZE
$^{E}_{C}$:	T	SET 4014 ALPHATEXT SIZE
$^{E}_{C}$;	T	SET 4014 ALPHATEXT SIZE
$^{E}_{C}$<	V	ENTER ANSI MODE
$^{E}_{C}$=	A	TEKKPAM (Keypad Application Mode)
	V	ENTER ALTERNATE KEYPAD MODE
$^{E}_{C}$>	A	TEKKPNM (Keypad Numeric Mode)
	V	EXIT ALTERNATE KEYPAD MODE
$^{E}_{C}$A	V	CURSOR UP
$^{E}_{C}$B	V	CURSOR DOWN
$^{E}_{C}$C	V	CURSOR RIGHT
$^{E}_{C}$D	A	IND (Index)
	V	CURSOR LEFT
$^{E}_{C}$E	A	NEL (Next Line)

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

Opcode	Syntax Mode[a]	Command Name
^[E]cH	A	HTS (Horizontal Tab Set)
	V	CURSOR TO HOME
^[E]cI	V	REVERSE LINEFEED
^[E]cIA	T	SET PICK APERTURE
^[E]cIC	T	SET GIN CURSOR
^[E]cID	T	DISABLE GIN
^[E]cIE	T	ENABLE GIN
^[E]cIF	T	SET GIN STROKE FILTERING
^[E]cIG	T	SET GIN GRIDDING
^[E]cIH	T	SET TABLET HEADER CHARACTERS
^[E]cII	T	SET GIN INKING
^[E]cIJ	T	SET GIN CURSOR SPEED
^[E]cIK	T	SET GIN REPORT FORMAT
^[E]cIL	T	SET REPORT MAXIMUM LINE LENGTH
^[E]cIM	T	SET REPORT EOM FREQUENCY
^[E]cIP	T	REPORT GIN POINT
^[E]cIQ	T	REPORT TERMINAL SETTINGS
^[E]cIR	T	SET GIN RUBBERBANDING
^[E]cIS	T	SET REPORT SIGNATURE CHARACTERS
^[E]cIV	T	SET GIN AREA
^[E]cIW	T	SET GIN WINDOW
^[E]cIX	T	SET GIN DISPLAY START POINT
^[E]cJ	V	ERASE TO END OF SCREEN
^[E]cJC	T	COPY
^[E]cJQ	T	REPORT DEVICE STATUS
^[E]cJV	T	SAVE
^[E]cK	V	ERASE TO END OF LINE
^[E]cKA	T	ENABLE DIALOG AREA
^[E]cKB	T	SET TAB STOPS
^[E]cKC	T	CANCEL
^[E]cKD	T	DEFINE MACRO
^[E]cKE	T	SET ECHO
^[E]cKF	T	LFCR
^[E]cKG	T	DIM ENABLE
^[E]cKH	T	HARDCOPY
^[E]cKI	T	IGNORE DELETES
^[E]cKL	T	LOCK KEYBOARD
^[E]cKN	T	RENEW VIEW
^[E]cKO	T	DEFINE NONVOLATILE MACRO
^[E]cKQ	T	REPORT ERRORS
^[E]cKR	T	CRLF
^[E]cKS	T	SET SNOOPY MODE
^[E]cKT	T	SET ERROR THRESHOLD
^[E]cKU	T	SAVE NONVOLATILE PARAMETERS
^[E]cKV	T	RESET
^[E]cKW	T	ENABLE KEY EXPANSION
^[E]cKX	T	EXPAND MACRO
^[E]cKY	T	SET KEY EXECUTE CHARACTER
^[E]cKZ	T	SET EDIT CHARACTERS
^[E]cLB	T	SET DIALOG AREA BUFFER SIZE
^[E]cLE	T	END PANEL
^[E]cLF	T	MOVE
^[E]cLG	T	DRAW
^[E]cLH	T	DRAW MARKER
^[E]cLI	T	SET DIALOG AREA INDEX

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

COMMANDS BY OPCODE (cont)

Opcode	Syntax Mode[a]	Command Name
^[c]CLK	T	INCLUDE COPY OF SEGMENT
^[c]CLL	T	SET DIALOG AREA LINES
^[c]CLM	T	SET DIALOG AREA WRITING MODE
^[c]CLP	T	BEGIN PANEL BOUNDARY
^[c]CLT	T	GRAPHIC TEXT
^[c]CLV	T	SET DIALOG AREA VISIBILITY
^[c]CLZ	T	CLEAR DIALOG SCROLL
^[c]CM	A	REVERSE INDEX
^[c]CMA	T	SET GRAPHTEXT SLANT
^[c]CMB	T	SET BACKGROUND INDICES
^[c]CMC	T	SET GRAPHTEXT SIZE
^[c]CMF	T	SET GRAPHTEXT FONT
^[c]CMG	T	SET GRAPHICS AREA WRITING MODE
^[c]CMI	T	SET PICK ID
^[c]CML	T	SET LINE INDEX
^[c]CMM	T	SET MARKER TYPE
^[c]CMN	T	SET GRAPHTEXT CHARACTER PATH
^[c]CMP	T	SELECT FILL PATTERN
^[c]CMQ	T	SET GRAPHTEXT PRECISION
^[c]CMR	T	SET GRAPHTEXT ROTATION
^[c]CMT	T	SET TEXT INDEX
^[c]CMV	T	SET LINE STYLE
^[c]CNB	T	SET STOP BITS
^[c]CNC	T	SET EOM CHARACTERS
^[c]CND	T	SET TRANSMIT DELAY
^[c]CNE	T	SET EOF STRING
^[c]CNF	T	SET FLAGGING MODE
^[c]CNK	T	SET BREAK TIME
^[c]CNL	T	SET TRANSMIT RATE LIMIT
^[c]CNM	T	PROMPT MODE
^[c]CNP	T	SET PARITY
^[c]CNQ	T	SET QUEUE SIZE
^[c]CNR	T	SET BAUD RATES
^[c]CNS	T	SET PROMPT STRING
^[c]CNT	T	SET EOL STRING
^[c]CNU	T	SET BYPASS CANCEL CHARACTER
^[c]COI	T	TEK HEADER CHARACTER
^[c]CPA	T	PORT ASSIGN
^[c]CPB	T	SET PORT STOP BITS
^[c]CPC	T	PORT COPY
^[c]CPE	T	SET PORT EOF STRING
^[c]CPF	T	SET PORT FLAGGING MODE
^[c]CPI	T	MAP INDEX TO PEN
^[c]CPJ	T	SET PORT BLACK WHITE INVERSION
^[c]CPL	T	PLOT
^[c]CPN	T	SET PORT NUMBER OF COPIES
^[c]CPO	T	SET PORT IMAGE ORIENTATION
^[c]CPP	T	SET PORT PARITY
^[c]CPQ	T	REPORT PORT STATUS
^[c]CPR	T	SET PORT BAUD RATE

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

Opcode	Syntax Mode[a]	Command Name
^[E]cQA	T	SET COPY SIZE
^[E]cQB	T	SET COLOR COPIER DATA RESOLUTION
^[E]cQD	T	SELECT HARDCOPY INTERFACE
^[E]cQE	T	SET HARDCOPY MONOCHROME ATTRIBUTES
^[E]cQI	T	MAP INDEX TO PRINT
^[E]cQL	T	SET DIALOG AREA HARDCOPY ATTRIBUTES
^[E]cQO	T	SET IMAGE ORIENTATION
^[E]cQT	T	SET COLOR COPIER REPAINT
^[E]cQU	T	SELECT COLOR HARDCOPY IMAGE DENSITY
^[E]cRA	T	SET VIEW ATTRIBUTES
^[E]cRC	T	SELECT VIEW
^[E]cRD	T	SET SURFACE DEFINITIONS
^[E]cRE	T	SET BORDER VISIBILITY
^[E]cRF	T	SET FIXUP LEVEL
^[E]cRH	T	SET PIXEL BEAM POSITION
^[E]cRI	T	SET SURFACE VISIBILITY
^[E]cRJ	T	LOCK VIEWING KEYS
^[E]cRK	T	DELETE VIEW
^[E]cRL	T	RUNLENGTH WRITE
^[E]cRN	T	SET SURFACE PRIORITIES
^[E]cRP	T	RASTER WRITE
^[E]cRQ	T	SET VIEW DISPLAY CLUSTER
^[E]cRR	T	RECTANGLE FILL
^[E]cRS	T	SET PIXEL VIEWPORT
^[E]cRU	T	BEGIN PIXEL OPERATIONS
^[E]cRV	T	SET VIEWPORT
^[E]cRW	T	SET WINDOW
^[E]cRX	T	PIXEL COPY
^[E]cSA	T	SET SEGMENT CLASS
^[E]cSB	T	BEGIN LOWER SEGMENT
^[E]cSC	T	END SEGMENT
^[E]cSD	T	SET SEGMENT DETECTABILITY
^[E]cSE	T	BEGIN NEW SEGMENT
^[E]cSF	T	CALL SEGMENT
^[E]cSG	T	SET GRAPHTEXT FONT GRID
^[E]cSH	T	SET SEGMENT HIGHLIGHTING
^[E]cSI	T	SET SEGMENT IMAGE TRANSFORM
^[E]cSJ	T	SET SEGMENT SCALE ROTATION
^[E]cSK	T	DELETE SEGMENT
^[E]cSL	T	SET CURRENT MATCHING CLASS
^[E]cSM	T	SET SEGMENT WRITING MODE
^[E]cSN	T	BEGIN HIGHER SEGMENT
^[E]cSO	T	BEGIN SEGMENT
^[E]cSP	T	SET PIVOT POINT
^[E]cSQ	T	REPORT SEGMENT STATUS
^[E]cSR	T	RENAME SEGMENT
^[E]cSS	T	SET SEGMENT DISPLAY PRIORITY
^[E]cST	T	BEGIN GRAPHTEXT CHARACTER
^[E]cSU	T	END GRAPHTEXT CHARACTER
^[E]cSV	T	SET SEGMENT VISIBILITY
^[E]cSX	T	SET SEGMENT POSITION
^[E]cSZ	T	DELETE GRAPHTEXT CHARACTER

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

COMMANDS BY OPCODE (cont)

Opcode	Syntax Mode[a]	Command Name
ESCTB	T	SET BACKGROUND COLOR
ESCTC	T	SET GIN CURSOR COLOR
ESCTD	T	SET ALPHA CURSOR INDICES
ESCTF	T	SET DIALOG AREA COLOR MAP
ESCTG	T	SET SURFACE COLOR MAP
ESCTM	T	SET COLOR MODE
ESCUC	T	DRAW CURVE
ESCUD	T	DELETE PART OF SEGMENT
ESCUE	T	REPLACE PART OF SEGMENT
ESCUG	T	SET CURVE SMOOTHNESS
ESCUH	T	SET SEGMENT EDIT MODE
ESCUI	T	INSERT INTO SEGMENT
ESCY	V	DIRECT CURSOR ADDRESS
ESCZ	A	TEKID (Identify Terminal)
	V	IDENTIFY
ESC[SP@	A	SL (Scroll Left)
ESC[SPA	A	SR (Scroll Right)
ESC[@	A	ICH (Insert Character)
ESC[A	A	CUU (Cursor Up)
ESC[B	A	CUD (Cursor Down)
ESC[C	A	CUF (Cursor Forward)
ESC[D	A	CUB (Cursor Backward)
ESC[H	A	CUP (Cursor Position)
ESC[I	A	CHT (Cursor Horizontal Tab)
ESC[J	A	ED (Erase in Display)
ESC[K	A	EL (Erase in Line)
ESC[L	A	IL (Insert Line)
ESC[M	A	DL (Delete Line)
ESC[P	A	DCH (Delete Character)
ESC[R	A	CPR (Cursor Position Report)
ESC[S	A	SU (Scroll Up)
ESC[T	A	SD (Scroll Down)
ESC[X	A	ECH (Erase Character)
ESC[Z	A	CBT (Cursor Backward Tab)
ESC[c	A	DA (Device Attributes)
ESC[f	A	HVP (Horizontal and Vertical Position)
ESC[g	A	TBC (Tab Clear)
ESC[2h	A	SM (Set Keyboard Action mode)
ESC[4h	A	SM (Set Insert/Replace mode)
ESC[12h	A	SM (Set Send/Receive mode)
ESC[20h	A	SM (Set Linefeed/Newline mode)
ESC[<1h	A	SM (Set Overstrike/Replace mode)
ESC[?1h	A	SM (Set Cursor Keys mode)
ESC[?3h	A	SM (Set Column mode)
ESC[?5h	A	SM (Set Screen mode)
ESC[?6h	A	SM (Set Origin mode)
ESC[?7h	A	SM (Set Autowrap mode)
ESC[?8h	A	SM (Set Autorepeat mode)

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

Opcode	Syntax Mode[a]	Command Name
ESC[i	A	MC (Media Copy)
ESC[2l	A	RM (Reset Keyboard Action mode)
ESC[4l	A	RM (Reset Insert/Replace mode)
ESC[12l	A	RM (Reset Send/Receive mode)
ESC[20l	A	RM (Reset Linefeed/Newline mode)
ESC[>1l	A	RM (Reset Overstrike/Replace mode)
ESC[?1l	A	RM (Reset Cursor Keys mode)
ESC[?3l	A	RM (Reset Column mode)
ESC[?5l	A	RM (Reset Screen mode)
ESC[?6l	A	RM (Reset Origin mode)
ESC[?7l	A	RM (Reset Autowrap mode)
ESC[?8l	A	RM (Reset Autorepeat mode)
ESC[m	A	SGR (Select Graphics Rendition)
ESC[n	A	DSR (Device Status Report)
ESC[r	A	TEKSTBM (Set Top and Bottom Margin)
ESC\	A	DMI (Disable Manual Input)
	T	SET 4014 LINE STYLE
ESCa through ESCo	T	SET 4014 LINE STYLE
ESCb	A	EMI (Enable Manual Input)
ESCc	A	RIS (Reset to Initial State)
FS	T	ENTER MARKER MODE
GS	T	ENTER VECTOR MODE
US	T	ENTER ALPHA MODE

[a] T = TEK mode
A = ANSI mode
V = VT52 mode

COMMANDS BY SETUP NAME

Setup Command Name	Descriptive Name[a]
ACURSOR	SET ALPHA CURSOR INDICES
ANSWERBACK	SET ANSWERBACK STRING
AUTOPRINT	MC (Media Copy)[b]
AUTOREPEAT	RM & SM Commands (TEKARM)[b]
AUTOWRAP	RM & SM Commands (TEKAWM)[b]
BACKINDEX	SET BACKGROUND INDICES
BASECOLOR	BASE COLOR[e]
BAUDRATE	SET BAUD RATES
BEGINPANEL	BEGIN PANEL BOUNDARY
BORDER	SET BORDER VISIBILITY
BREAKTIME	SET BREAK TIME
BYPASSCANCEL	SET BYPASS CANCEL CHARACTER
CANCEL	CANCEL
CAPITALS	CAPITALS[e]
CBACKGROUND	SET BACKGROUND COLOR
CLEARDIALOG	CLEAR DIALOG SCROLL
CLICK	CLICK[e]
CMAP	SET SURFACE COLOR MAP
CMODE	SET COLOR MODE
CODE	SELECT CODE[d]
COLUMNMODE	RM & SM Commands (TEKCOLM)[b]
COPY	COPY
CRLF	CRLF
CSMOOTH	SET CURVE SMOOTHNESS
CURSORKEYMODE	RM & SM Commands (TEKCKM)[b]
CURSORTYPE	CURSOR TYPE
CURVE	DRAW CURVE
CXKEYPAD	CX KEYPAD[e]
DABUFFER	SET DIALOG AREA BUFFER SIZE
DACMAP	SET DIALOG AREA COLOR MAP
DAENABLE	ENABLE DIALOG AREA
DAINDEX	SET DIALOG AREA INDEX
DALINES	SET DIALOG AREA LINES
DAMODE	SET DIALOG AREA WRITING MODE
DAVISIBILITY	SET DIALOG AREA VISIBILITY
DEFINE	DEFINE MACRO
DIM	DIM ENABLE
DRAW	DRAW
ECHO	SET ECHO
EDITCHARS	SET EDIT CHARACTERS
EDITMARGINS	RM & SM Commands (TEKSTBM)[b]
ENDPANEL	END PANEL
EOFSTRING	SET EOF STRING
EOLSTRING	SET EOL STRING
EOMCHARS	SET EOM CHARACTERS
ERRORLEVEL	SET ERROR THRESHOLD
EXPAND	EXPAND MACRO
FACTORY	FACTORY
FILLPATTERN	SELECT FILL PATTERN
FIXUP	SET FIXUP LEVEL
FLAGGING	SET FLAGGING MODE

[a] **Unless otherwise noted, commands are 4100-style; see 4100-style command descriptions.**

[b] **An ANSI-style command; see ANSI-style command descriptions.**

[c] **A VT52-style command; see VT52-style command descriptions.**

[d] **All host command modes.**

[e] **CX Series only.**

Setup Command Name	Descriptive Name[a]
GAMODE	SET GRAPHICS AREA WRITING MODE
GCURSOR	SET GIN CURSOR COLOR
GINAREA	SET GIN AREA
GINCURSOR	SET GIN CURSOR
GINDISABLE	DISABLE GIN
GINENABLE	ENABLE GIN
GINFILTERING	SET GIN STROKE FILTERING
GINGRIDDING	SET GIN GRIDDING
GININKING	SET GIN INKING
GINPICKAPERTURE	SET PICK APERTURE
GINREPORT	SET GIN REPORT FORMAT
GINRUBBERBAND	SET GIN RUBBERBANDING
GINSHEADERCHARS	SET TABLET HEADER CHARACTERS
GINSTARTPOINT	SET GIN DISPLAY START POINT
GINWINDOW	SET GIN WINDOW
GSPEED	SET GIN CURSOR SPEED
GTBEGIN	BEGIN GRAPHTEXT CHARACTER
GTDELETE	DELETE GRAPHTEXT CHARACTER
GTEND	END GRAPHTEXT CHARACTER
GTEXT	GRAPHIC TEXT
GTFONT	SET GRAPHTEXT FONT
GTGRID	SET GRAPHTEXT FONT GRID
GTINDEX	SET TEXT INDEX
GTPATH	SET GRAPHTEXT CHARACTER PATH
GTPRECISION	SET GRAPHTEXT PRECISION
GTROTATION	SET GRAPHTEXT ROTATION
GTSIZE	SET GRAPHTEXT SIZE
GTSLANT	SET GRAPHTEXT SLANT
HCDAATTRIBUTES	SET DIALOG AREA HARDCOPY ATTRIBUTES
HCDATARES	SET COLOR COPIER DATA RESOLUTION
HCDENSITY	SELECT COLOR HARDCOPY IMAGE DENSITY
HCINTERFACE	SELECT HARDCOPY INTERFACE
HCMAP	MAP INDEX TO PRINT
HCMONOCHROME	SET HARDCOPY MONOCHROME ATTRIBUTES
HCORIENT	SET IMAGE ORIENTATION
HCREPAINT	SET COLOR COPIER REPAINT
HCSIZE	SET COPY SIZE
HELP	HELP
HOSTPORT	HOST PORT[e]
IGNOREDEL	IGNORE DELETES
INSERTREPLACE	RM & SM Commands (IRM)[b]
KEYEXCHAR	SET KEY EXECUTE CHARACTER
KEYEXPAND	ENABLE KEY EXPANSION
KEYPADMODE	TEKKPAM (Keypad Application Mode)[b]
	TEKKPAM (Keypad Numeric Mode)[b]
	ENTER ALTERNATE KEYPAD MODE[c]
	EXIT ALTERNATE KEYPAD MODE[c]

[a] **Unless otherwise noted, commands are 4100-style; see 4100-style command descriptions.**

[b] **An ANSI-style command; see ANSI-style command descriptions.**

[c] **A VT52-style command; see VT52-style command descriptions.**

[d] **All host command modes.**

[e] **CX Series only.**

COMMANDS BY SETUP NAME (cont)

Setup Command Name	Descriptive Name[a]
LEARN	LEARN
LFCR	LFCR
LINEINDEX	SET LINE INDEX
LINESTYLE	SET LINE STYLE
LOCAL	LOCAL
LOCKVIEWINGKEYS	LOCK VIEWING KEYS
MACROSTATUS	MACRO STATUS
MARKER	DRAW MARKER
MARKERTYPE	SET MARKER TYPE
MOVE	MOVE
NVDEFINE	DEFINE NONVOLATILE MACRO
NVLEARN	LEARN NONVOLATILE
NVSAVE	SAVE NONVOLATILE PARAMETERS
ORIGINMODE	RM & SM Commands (TEKOM)[b]
PARITY	SET PARITY
PASSIGN	PORT ASSIGN
PBAUD	SET PORT BAUD RATE
PBITS	SET PORT STOP BITS
PCOPIES	SET PORT NUMBER OF COPIES
PCOPY	PORT COPY
PEOF	SET PORT EOF STRING
PFLAG	SET PORT FLAGGING MODE
PINVERSION	SET PORT BLACK WHITE INVERSION
PLOT	PLOT
PMAP	MAP INDEX TO PEN
PORIENT	SET PORT IMAGE ORIENTATION
PPARITY	SET PORT PARITY
PROMPTMODE	PROMPT MODE
PROMPTSTRING	SET PROMPT STRING
PXBEGIN	BEGIN PIXEL OPERATIONS
PXCOPY	PIXEL COPY
PXPOSITION	SET PIXEL BEAM POSITION
PXRASTERWRITE	RASTER WRITE
PXRECTANGLE	RECTANGLE FILL
PXRUNLENGTHWRITE	RUNLENGTH WRITE
PXVIEWPORT	SET PIXEL VIEWPORT
QUEUESIZE	SET QUEUE SIZE
RENEW	RENEW VIEW
REOM	SET REPORT EOM FREQUENCY
RESET	RESET
RLINELENGTH	SET REPORT MAXIMUM LINE LENGTH
RSIGCHARS	SET REPORT SIGNATURE CHARACTERS

[a] Unless otherwise noted, commands are 4100-style; see 4100-style command descriptions.
[b] An ANSI-style command; see ANSI-style command descriptions.
[c] A VT52-style command; see VT52-style command descriptions.
[d] All host command modes.
[e] CX Series only.

Setup Command Name	Descriptive Name[a]
SAVE	SAVE
SCREENMODE	RM & SM Commands (TEKSCNM)[b]
SDEFINITIONS	SET SURFACE DEFINITIONS
SELECTCHARSET	SCS (Select Character Set)
SGCALL	CALL SEGMENT
SGCLASS	SET SEGMENT CLASS
SGCLOSE	END SEGMENT
SGDELETE	DELETE SEGMENT
SGDETECT	SET SEGMENT DETECTABILITY
SGDOWN	BEGIN LOWER SEGMENT
SGEDIT	SET SEGMENT EDIT MODE
SGHIGHLIGHT	SET SEGMENT HIGHLIGHTING
SGINCLUDE	INCLUDE COPY OF SEGMENT
SGINSERT	INSERT INTO SEGMENT
SGMATCHINGCLASS	SET CURRENT MATCHING CLASS
SGMODE	SET SEGMENT WRITING MODE
SGNEW	BEGIN NEW SEGMENT
SGOPEN	BEGIN SEGMENT
SGPICKID	SET PICK ID
SGPIVOT	SET PIVOT POINT
SGPOSITION	SET SEGMENT POSITION
SGPRIORITY	SET SEGMENT DISPLAY PRIORITY
SGREMOVE	DELETE PART OF SEGMENT
SGRENAME	RENAME SEGMENT
SGREPLACE	REPLACE PART OF SEGMENT
SGSCALEROTATE	SET SEGMENT SCALE ROTATE
SGTRANSFORM	SET SEGMENT IMAGE TRANSFORM
SGUP	BEGIN HIGHER SEGMENT
SGVISIBILITY	SET SEGMENT VISIBILITY
SNOOPY	SET SNOOPY MODE
SPRIORITIES	SET SURFACE PRIORITIES
STATUS	STATUS
STOPBITS	SET STOP BITS
SVISIBILITY	SET SURFACE VISIBILITY
TABS	SET TAB STOPS
TEKHEADER	TEK HEADER CHARACTER
TEXTRENDITION	SGR (Select Graphic Rendition)[b]
TMETHOD	TRANSLATION METHOD[e]
VATTRIBUTES	SET VIEW ATTRIBUTES
VCLUSTER	SET VIEW DISPLAY CLUSTER
VDELETE	DELETE VIEW
VIEWPORT	SET VIEWPORT
VSELECT	SELECT VIEW
WINDOW	SET WINDOW
XMTDELAY	SET TRANSMIT DELAY
XMTLIMIT	SET TRANSMIT RATE LIMIT

[a] Unless otherwise noted, commands are 4100-style; see 4100-style command descriptions.

[b] An ANSI-style command; see ANSI-style command descriptions.

[c] A VT52-style command; see VT52-style command descriptions.

[d] All host command modes.

[e] CX Series only.

COMMANDS THAT CAN BE SAVED

The following commands can be saved in nonvolatile memory:

BASE COLOR
CAPITALS
CLICK
CRLF
CURSOR TYPE
CX KEYPAD
DEFINE NONVOLATILE MACRO
DIM ENABLE
ENABLE DIALOG AREA
HOST PORT
IGNORE DELETES
LFCR
LNM (Linefeed/Newline Mode)[a]
MAP INDEX TO PRINT
PORT ASSIGN
SELECT CODE
SELECT HARDCOPY INTERFACE
SET ALPHA CURSOR INDICES
SET ANSWERBACK STRING
SET BAUD RATES
SET BREAK TIME
SET BYPASS CANCEL CHARACTER
SET COLOR COPIER DATA RESOLUTION
SET COLOR COPIER REPAINT
SET COPY SIZE
SET DIALOG AREA BUFFER SIZE
SET DIALOG AREA COLOR MAP
SET DIALOG AREA HARDCOPY ATTRIBUTES
SET DIALOG AREA INDEX
SET DIALOG AREA LINES
SET DIALOG AREA VISIBILITY
SET DIALOG AREA WRITING MODE
SET ECHO
SET EDIT CHARACTERS
SET EOF STRING
SET EOL STRING
SET EOM CHARACTERS
SET FLAGGING MODE
SET GIN CURSOR COLOR
SET GIN CURSOR SPEED
SET GRAPHICS AREA WRITING MODE
SET HARDCOPY MONOCHROME ATTRIBUTES
SET IMAGE ORIENTATION
SET KEY EXECUTE CHARACTER
SET PARITY

[a] **This is an ANSI mode command.**

[b] **For the SGR command, digit-only parameter values cannot be saved, but prefixed (<, =, and >) parameter values can be saved.**

SET PORT BAUD RATE
SET PORT BLACK WHITE INVERSION
SET PORT EOF STRING
SET PORT FLAGGING MODE
SET PORT IMAGE ORIENTATION
SET PORT NUMBER OF COPIES
SET PORT PARITY
SET PORT STOP BITS
SET PROMPT STRING
SET QUEUE SIZE
SET REPORT EOM FREQUENCY
SET STOP BITS
SET TAB STOPS
SET TABLET HEADER CHARACTERS
SET TRANSMIT DELAY
SET TRANSMIT RATE LIMIT
SGR (Select Graphics Rendition)[a,b]
SRM (Send/Receive Mode)[a]
TEK HEADER CHARACTER
TEKANM (ANSI-to-VT52 MODE)[a]
TEKARM (Autorepeat Mode)[a]
TEKAWM (Autowrap Mode)[a]
TEKCOLM (Column Mode)[a]
TEKOM (Origin Mode)[a]
TEKORM (Overstrike/Replace Mode)[a]
TEKSCNM (Screen Mode)[a]
TRANSLATION METHOD

[a] This is an ANSI mode command.

[b] For the SGR command, digit-only parameter values cannot be saved, but prefixed (<, =, and >) parameter values can be saved.

ANSI AND VT52 SYNTAX

The ANSI and VT52 command descriptions are consistently structured, using an easy-to-read set of syntax conventions. The following discussion gives a summary of the overall structure of command descriptions and of the notation used to show syntax.

RULES FOR ISSUING ANSI AND VT52 COMMANDS

Follow these rules when issuing ANSI and VT52 commands:

- In host syntax, issue the command as shown. An ANSI command may include the control sequence introducer (^{E}C[ ), one or more parameters, and a command terminator character.
- Do not put separator spaces between parts of a command. (In a few cases, a Space character (^{S}P) is a valid part of a command.)
- In host syntax, when a command has more than one parameter, separate them with semicolons.
- You can abbreviate the Setup name — just enter as many letters of the name as are needed to identify it uniquely. For example, the Setup name *CODE* can be abbreviated *COD* (if you tried to abbreviate this to *CO*, the terminal would issue an error message since it wouldn't know whether you want to issue the CODE command or the COLUMNMODE command).
- In Setup syntax, enter parameters on the same line and separate them with a space or a comma.
- Most ANSI commands take integer values for their parameters. The widest valid range is 0 — 32767. If you specify a value higher than is reasonable for a particular parameter, the parameter defaults to the highest value that it can accept. You can omit leading zeros in ANSI commands issued from the host or in Setup.
- Some parameters are Tektronix-private parameters. These are for the MC (Media Copy), RM (Reset Mode), SGR (Select Graphics Rendition), and SM (Set Mode) commands, and consist of a prefix (<, =, >, or ?) followed by an integer.
- The Setup versions of a few ANSI and VT52 commands use keyword parameters. These are simple words like *yes* or *insert* . You can abbreviate keyword parameters — you need to enter just enough of the keyword to make your choice clear. For example, where the keywords are *ANSI, EDIT, VT52,* and *TEK* , you could use just *A, E, V,* or *T* as parameter values.

The commands that you can save are identified following the command's statement of purpose with the phrase *Can be saved in nonvolatile memory.* You can find a list of all the commands that can be saved in nonvolatile memory in the command cross-reference lists at the beginning of this reference guide.

COMMAND DESCRIPTION FORMAT

Each command description is formatted in the following way:

- Command names are always shown in all uppercase characters at the beginning of the command description, followed by the command's function statement.
- The *Host* syntax line shows the way a host application would send this command to a terminal.
- The *Setup* syntax line shows the way you would enter this command at a terminal keyboard.
- The *Report* format line shows the way the terminal reports information to the host.
- Characters shown in bold type are those that you must enter exactly as shown.
- Three periods (. . .) following a parameter name indicate that the command accepts multiple entries of the specified parameter.
- Default parameter values, if any, are shown at the end of each parameter description; when there is no default, the default value is shown as *(none)*. Each parameter can have up to two defaults:
  - *Factory* — The value assigned a parameter when the terminal is shipped from Tektronix; parameters can be restored to this value by issuing the FACTORY command or running the Extended Self-Test program.
  - *Omitted* — The value assigned a parameter if the command is issued and no value is specified for the parameter.
- Many commands descriptions include syntax examples showing how to issue the command. When both host and Setup examples are included, the two examples achieve the same result.

ANSI COMMANDS

This is a complete listing of the terminal's ANSI commands, including their syntax and defaults (if any). The commands are presented alphabetically according to their descriptive names.

$^{B}_{L}$ (Bell)

Sounds the terminal's bell.

Host: $^{B}_{L}$

$^{B}_{S}$ (Back Space)

Moves the cursor left one position.

Host: $^{B}_{S}$

CBT (Cursor Backward Tab)

Moves the cursor backwards to a preceding tab stop on the current line.

Host: $^{E}_{C}$[number-of-preceding-tab-stops **Z**

number-of-preceding-tab-stops: specifies the number of tab positions the cursor moves to the left. A value of 1 moves the cursor to the preceding tab stop; a value greater than 1 (*n*) moves the cursor to the *n* th preceding tab stop on the current line.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: $^{E}_{C}$**[3Z**

CHT (Cursor Horizontal Tab)

Moves the cursor forward to a following tab stop on the current line.

Host: $^{E}_{C}$[number-of-following-tab-stops **I**

number-of-following-tab-stops: specifies the number of tab stops the cursor moves to the right. A value of 1 moves the cursor to the next tab stop; a value greater than 1 (*n*) moves the cursor forward to the *n* th tab stop on the current line.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: $^{E}_{C}$**[3I**

^{C}N (Cancel)

Cancels an ANSI command in progress.

Host: ^{C}N

CPR (Cursor Position Report)

Reports the row and column address of the current cursor position.

Report: ^{E}C[row ; column **R**

The terminal sends a Cursor Position Report to the host in response to a DSR (Device Status Report) command.

The terminal does not enter Bypass mode for the Cursor Position Report.

Example: ^{E}C**[22;55R**

^{C}R (Carriage Return)

Moves the cursor to the first column in the current line.

Host: ^{C}R

If the 4100-style command CRLF has been set so that ^{C}R implies ^{L}F, a line feed action is also performed.

CUB (Cursor Backward)

Moves the cursor left one or more columns.

Host: ^{E}C[number-of-columns **D**

number-of-columns: specifies the number of columns the cursor moves toward the left side of the screen. The cursor does not move beyond Column 1.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: ^{E}C**[10D**

CUD (Cursor Down)

Moves the cursor down one or more lines.

Host: ^{E}C[number-of-lines **B**

number of lines: specifies the number of lines the cursor moves toward the end of the dialog buffer.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: ^{E}C**[5B**

CUF (Cursor Forward)

Moves the cursor one or more columns to the right.

Host: Esc[number-of-columns **C**

number-of-columns: specifies the number of columns the cursor moves toward the right side of the screen. The cursor does not move beyond the rightmost column.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: Esc**[5C**

CUP (Cursor Position)

Moves the cursor to the specified row and column.

Host: Esc[row-number ; column-number **H**

row-number: specifies the destination row for the cursor.

Defaults: Factory = (none)
Omitted or 0 = 1

column-number: specifies the destination column for the cursor.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: Esc**[5;12H**

CUU (Cursor Up)

Moves the cursor upward one or more lines.

Host: Esc[number-of-lines **A**

number-of-lines: specifies the number of lines the cursor moves toward the top of the screen.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: Esc**[20A**

DA (Device Attributes)

Queries the terminal for what kind of terminal it is.

Host: ^[**[0c**
Report: ^[**[?1;2c**

In response to this command, the terminal reports to the host (using the report format shown) that it is similar to a VT100 with Advanced Video Option.

DCH (Delete Character)

Deletes one or more characters.

Host: ^[**[** number-of-characters **P**

number-of-characters: specifies the number of characters to delete.
Defaults: Factory = (none)
Omitted or 0 = 1

Starts at the cursor position. Only characters on the current line are affected by this command.

Example: ^[**[10P**

DL (Delete Line)

Deletes one or more lines starting with the current line.

Host: ^[**[** number-of-lines **M**

number-of-lines: specifies the number of lines to delete.
Defaults: Factory = (none)
Omitted or 0 = 1

If you have defined fixed and scrolling regions, this command only affects lines in the region that contains the cursor.

Example: ^[**[5M**

DMI (Disable Manual Input)

Disables the keyboard.

Host: ^[**`**

Issuing this command is equivalent to issuing the ANSI command SM to set Keyboard Action Mode (KAM) or to issuing the 4100-style LOCK KEYBOARD command with a parameter of 1.

DSR (Device Status Report)

Queries the terminal for a Cursor Position Report or an ANSI Device Status Report.

Host: Esc[status **n**

status: specifies which type of report you want. Valid values are:

5 Reports status in a Device Status Report
6 Reports cursor position in a Cursor Position Report

Defaults: Factory = (none)
Omitted = Error [n11

The ANSI Device Status Report is always Esc**[0n**, which means the terminal is functioning properly.

See the CPR description for information on the Cursor Position Report.

ECH (Erase Character)

Erases one or more characters, starting at the cursor position.

Host: Esc[number-of-characters **X**

number-of-characters: specifies the number of characters to erase.

Defaults: Factory = (none)
Omitted or 0 = 1

This command is not confined to the current line, but can erase characters on following lines and into the fixed region from within the scrolling region.

Example: Esc**[15X**

ED (Erase In Display)

Erases all or part of the dialog buffer.

Host: Esc[erase-extent **J**

erase-extent: specifies the amount of text to erase:

0 Erases text from the cursor position to the end of the dialog buffer
1 Erases text from the beginning of the dialog buffer to the cursor position
2 Erases the entire dialog buffer

Defaults: Factory = (none)
Omitted = 0

The cursor does not change position.

Example: Esc**[2J**

EL (Erase In Line)

Erases all or part of the current line.

Host: ^{E}C[erase-extent **K**

erase-extent: specifies the amount of text to erase:

- 0 Erases text from the cursor position to the end of the line
- 1 Erases text from the beginning of the line to the cursor position
- 2 Erases the entire line

Defaults: Factory = (none)
Omitted = 0

Example: ^{E}C**[0K**

EMI (Enable Manual Input)

Enables the keyboard.

Host: ^{E}C**b**

Issuing this command is equivalent to issuing the ANSI command RM to reset Keyboard Action Mode (KAM) or to issuing the 4100-style LOCK KEYBOARD command with a parameter of 0.

ENQUIRY

Queries the terminal for its answerback string.

Host: ^{E}Q

You can issue this command from any host command mode. The terminal does not respond to this command in Local mode.

^{F}F (Form Feed)

Indicates the start of a new page to a hardcopy unit.

Host: ^{F}F

This character inserts a ^{F}Fcharacter into the dialog area.

^H_T (Horizontal Tab)

Advances the cursor to the next horizontal tab stop on the current line.

Host: ^H_T

Factory default tabs are set at every eighth column, beginning in Column 1 (that is, Columns 1, 9, 17, . . .). You can change these tab stops with the ANSI HTS command or the 4100-style SET TAB STOPS command.

HTS (Horizontal Tab Set)

Sets a tab stop at the current cursor location.

Host: ^E_C**H**

Factory default tabs are set at every eighth column, beginning in Column 1 (that is, Columns 1, 9, 17, . . .). You can also use the 4100-style command SET TAB STOPS to set several tabs in a single command.

HVP (Horizontal and Vertical Position)

Moves the cursor to a specified row and column.

Host: ^E_C**[** row-number **;** column-number **f**

row-number: specifies the destination row for the cursor.
Defaults: Factory = (none)
Omitted or 0 = 1

column-number: specifies the destination column for the cursor.
Defaults: Factory = (none)
Omitted or 0 = 1

If Origin mode is Relative (TEKOM set) and edit margins are set, Row 1, Column 1 is the first position in the scrolling region. However, if Origin mode is Absolute (TEKOM reset), Row 1, Column 1 is the first position of the dialog buffer.

Example: ^E_C**[10;15f**

ICH (Insert Character)

Inserts one or more Space characters at the cursor position.

Host: ^{E}C[number-of-characters @

number-of-characters: specifies the number of Space characters to insert.

Defaults: Factory = (none)
Omitted or 0 = 1

If the insertion pushes any characters beyond the end of the line, those characters are lost (even if autowrap is on).

Example: ^{E}C[20@

IL (Insert Line)

Inserts one or more blank lines in front of the current line.

Host: ^{E}C[number-of-lines L

number-of-lines: specifies the number of lines to insert.

Defaults: Factory = (none)
Omitted or 0 = 1

Lines scrolled below the bottom margin are lost. If fixed and scrolling regions have been defined, this command only affects lines in the region containing the cursor.

Example: ^{E}C[5L

IND (Index)

Moves the cursor down one line without moving it horizontally.

Host: ^{E}CD

^{L}F (Line Feed)

Moves the cursor down one line.

Host: ^{L}F

If LNM (Linefeed/Newline mode) is reset (with the RM command), then ^{L}F has exactly the same effect as the IND (Index) command.

If LNM (Linefeed/Newline mode) is set (with the SM command), then ^{L}F has the same effect as a ^{C}R and IND combination.

MC (Media Copy)

Turns data logging on or off; can be used for dialog copies from the host.

Host: ^{E}C[copy-option **i**
Setup: **AUTOPRINT** copy-option

copy-option: starts or stops transfer of data to a printer. Must be one of the following:

Host	Setup	
0	(none)	Copies the dialog area
?3	toggle	Turns data logging on or off
?4	no	Turns data logging off
?5	yes	Turns data logging on

Defaults: Factory = 0 (host), no (Setup)
Omitted = 0 (host), yes (Setup)

When data logging is turned on, each line sent to the dialog area is also sent to an attached copier or printer. You can also use this command from the host to make a simple dialog copy.

The data-logging feature does not work with the 4691 and 4692 Copiers, but you can use the MC (Media Copy) command to make a simple dialog copy with these copiers.

Example: Host ^{E}C**[?3i**
Setup **AUTOPRINT TOGGLE**

NEL (Next Line)

Moves the cursor to the beginning of the next line.

Host: ^{E}C**E**

This command has the same effect as a ^{C}R and IND combination.

REPORT SYNTAX MODE

Queries the terminal for a Terminal Settings Report that gives the terminal's current host command mode.

Host: **ESC#!0**

This command is recognized in all host command modes: ANSI, EDIT, TEK, and VT52. See *Reports* at the end of the 4100-style commands for information about Terminal Settings Reports.

RI (Reverse Index)

Moves the cursor up one line without moving it horizontally.

Host: **ESCM**

RIS (Reset to Initial State)

Resets certain terminal attributes to their default values.

Host: **ESCc**

Settings are reset to their *power-up condition* (a combination of factory default settings and any settings that have been saved in nonvolatile memory).

When the terminal receives this command, it:

- Erases the screen
- Positions the alpha cursor at the Home position (Row 1, Column 1 of the dialog buffer)
- Sets Insert/Replace mode to Replace
- Clears edit margins
- Turns off the text characteristics set with the SGR command
- Selects the default G0 and G1 character set
- Shifts in the G0 character set
- Enables or disables the dialog area (depending on the saved setting for the 4100-style command ENABLE DIALOG AREA)
- Makes the dialog area visible

RM (Reset Mode)

Resets one or more terminal modes set with the SM (Set Mode) command.

Host: ESC[mode . . . l
Setup: (See Table 4)

mode: resets one or more ANSI modes. Table 4 (under the SM command description) shows both host and Setup syntax.

Defaults: Factory = (none)
Omitted = Error

The three dots (. . .) mean that you can enter more than one parameter value.

When the terminal encounters a parameter beginning with a prefix (? or <), it uses the same prefix for all subsequent digit-only parameters. This means that if you issue an RM command with more than one parameter, you should issue the digit-only parameters first, followed by any prefixed parameters.

Example: Host ESC[4;20l
Setup **INSERTREPLACE REPLACE**
LFCR NO

SUB (Substitute)

Cancels an ANSI command in progress and inserts a SUB character at the current cursor location in the dialog area.

Host: SUB

SCS (Select Character Set)

Selects one or two of the character sets stored in the terminal's firmware and makes them available through the keyboard.

Host
To select G0: ESC(character-set
To select G1: ESC)character-set
Setup
To select G0: **SELECTCHARSET G0,**character-set
To select G1: **SELECTCHARSET G1,**character-set

character-set: specifies the character set you want. Valid values are shown in Table 1.

Defaults: Factory = Determined by keyboard
Omitted = (none)

This command has no effect on the character set displayed in Setup. Setup always displays the keyboard's default character set.

Example: Host ESC)A
Setup **SELECTCHARSET G1,A**

SD (Scroll Down)

Scrolls lines down.

Host: $^{E}_{C}$[number-of-lines **T**

number-of-lines: specifies the number of lines the dialog buffer scrolls toward the bottom of the screen.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: $^{E}_{C}$**[8T**

SELECT CODE

Selects the host command mode. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$%!syntax
Setup: **CODE** syntax

syntax: specifies the host command mode that you want to use:

Host	Setup	
0	TEK	Selects TEK mode
1	ANSI	Selects ANSI mode
2	EDIT	Selects EDIT mode
3	VT52	Selects VT52 mode

Defaults: Factory = (none)
Omitted = TEK

This command is recognized in all host command modes.

Example: Host $^{E}_{C}$%!2
Setup **CODE EDIT**

Table 1
SCS PARAMETER VALUES

Value	Character Set Designated
A	United Kingdom
B	ASCII/North American
G	Swedish
K	German
f[a]	French
\	Danish/Norwegian
0	Rulings Set
3	Supplementary

[a] **The terminal will accept *R* as a parameter value to select the French character set, but the current standard is *f*. For compatibility with current and future standards, you should use *f* to select the French character set.**

SGR (Select Graphic Rendition)

Selects display attributes for text in the dialog area.

Host: Esc[graphic-rendition . . . **m**
Setup: **TEXTRENDITION** graphic-rendition . . .

graphic-rendition: specifies the colors and other display characteristics for text displayed in the dialog area. Tables 2 and 3 contain the parameter values and descriptions.
Defaults: Factory = 0
Omitted = 0

Three dots (. . .) mean that you can enter more than one parameter value.

Table 2 lists prefixed parameters, which can be issued only in host syntax and can be saved in nonvolatile memory.

Table 3 lists the digit-only parameters, which can be issued in host or Setup syntax and cannot be saved in nonvolatile memory.

When the terminal encounters a parameter beginning with a prefix (<, =, or >), it uses the same prefix for all subsequent digit-only parameters. This means that if you issue an SGR command with more than one parameter, you should issue the digit-only parameters first, followed by any prefixed parameters.

Example: Host Esc[**4;31m**
Setup **TEXTRENDITION 4,31**

Table 2
SGR PREFIXED PARAMETER VALUES

Display Characteristic	Parameter [a,b]	Action
Character color	<*index*	Specifies the character index. Index 0 selects black characters.
Character cell color	=*index*	Specifies the character cell background index. Index 0 means that the graphics area shows through.
Dialog area background color	>*index*	Specifies the background index. Index 0 means that the graphics area shows through

[a] **These parameters are available in host syntax only; they cannot be issued in Setup.**
[b] ***index* is a variable — you fill in an index number from 0 through 7 to specify a color.**

^{S}I (Shift In)

Invokes the current G0 character set.

Host: ^{S}I

Table 3
SGR DIGIT-ONLY PARAMETER VALUES[a]

Display Characteristic	Parameter	Action
All color indices	0	Returns color indices to values set by SET DIALOG AREA INDEX command[b]
Character emphasis	1	Simulates bold characters by displaying text in Index 2, which defaults to *red*
	4	Starts underscoring
	5	Starts blinking
	7	Reverses character and character-background indices
	24	Stops underscoring
	25	Stops blinking
	27	Returns character and character-background indices to original values
Character color	30	Selects Index 0 (default *black*)
	31	Selects Index 2 (default *red*)
	32	Selects Index 3 (default *green*)
	33	Selects Index 7 (default *yellow*
	34	Selects Index 4 (default *blue*)
	35	Selects Index 6 (default *magenta)*
	36	Selects Index 5 (default *cyan*)
	37	Selects Index 1 (default *white*)
	39	Selects Index 1 (default *white*)
Character background color	40	Selects Index 0 (default *black*
	41	Selects Index 2 (default *red*)
	42	Selects Index 3 (default *green*)
	43	Selects Index 7 (default *yellow*
	44	Selects Index 4 (default *blue*)
	45	Selects Index 6 (default *magenta)*
	46	Selects Index 5 (default *cyan*)
	47	Selects Index 1 (default *white*)
	49	Selects Index 0 (default *transparent*)

[a] **These parameters are available in both host and Setup.**
[b] **This is a 4100-style command.**

SL (Scroll Left)

Scrolls columns left.

Host: ESC[number-of-columns SP@

number-of-columns: specifies the number of columns the dialog buffer scrolls to the left.

Defaults: Factory = (none)
Omitted or 0 = 1

You can scroll horizontally only when Column mode is set to 132.

Example: ESC[12SP@

SM (Set Mode)

Sets one or more terminal modes — used with the RM (Reset Mode) command.

Host: ESC[mode . . . **h**
Setup: (See Table 4)

mode: sets one or more ANSI modes. Table 4 shows both host and Setup syntax, including parameter values.

Defaults: Factory = (none)
Omitted = Error

The three dots (. . .) mean that you can enter more than one parameter value.

When the terminal encounters a parameter beginning with a prefix (**?** or **<**), it uses the same prefix for all subsequent digit-only parameters. This means that if you issue an SM command with more than one parameter, you should issue the digit-only parameters first, followed by any prefixed parameters.

Example: Host ESC[**4;20h**
Setup **INSERTREPLACE INSERT**
LFCR YES

Table 5
CURSOR KEYS MODE CODES

Function Key	Codes Sent When Set (SM)	Codes Sent When Reset (RM)
F1	ESCOA	ESC[A
F2	ESCOB	ESC[B
F3	ESCOD	ESC[D
F4	ESCOC	ESC[C

Table 4
RM AND SM PARAMETER VALUES

Mode Name[a]	Action	Host Syntax	Setup Syntax
IRM (Insert/ Replace Mode)	*Reset:* Replace	ESC[4l	INSERTREPLACE REPLACE
	Set: Insert	ESC[4h	INSERTREPLACE INSERT
KAM (Keyboard Action Mode)	*Reset:* Enables keyboard	ESC[2l	(none)
	Set: Disables keyboard	ESC[2h	(none)
LNM (Linefeed/ Newline Mode)	*Reset:* Line Feed only	ESC[20l	LFCR NO
	Set: Line Feed and Carriage Return	ESC[20h	LFCR YES
SRM (Send/ Receive Mode)	*Reset:* Enables echo	ESC[12l	ECHO YES
	Set: Disables echo	ESC[12h	ECHO NO
TEKANM (ANSI-to-VT52 Mode)	*Reset:* Selects VT52 mode	ESC[?2l	CODE VT52
	Set: No effect	(none)	(none)
TEKARM (Autorepeat Mode)	*Reset:* Disables autorepeat	ESC[?8l	AUTOREPEAT NO
	Set: Enables autorepeat	ESC[?8h	AUTOREPEAT YES
TEKAWM (Autowrap Mode)	*Reset:* Disables autowrap	ESC[?7l	AUTOWRAP NO
	Set: Enables autowrap	ESC[?7h	AUTOWRAP YES
TEKCKM (Cursor Keys Mode) *See also Table 5*	*Reset:* Function Keys F1 — F4 transmit normal commands or programmed values	ESC[?1l	CURSORKEY NO
	Set: Function Keys F1 — F4 transmit application values	ESC[?1h	CURSORKEY YES
TEKCOLM (Column Mode)	*Reset:* Specifies 80 column dialog buffer	ESC[?3l	COLUMNMODE 80
	Set: Specifies 132 column dialog buffer	ESC[?3h	COLUMNMODE 132
TEKOM (Origin Mode)	*Reset:* Cursor address Row 1, Column 1 is beginning of dialog buffer	ESC[?6l	ORIGINMODE ABSOLUTE
	Set: Cursor address Row 1, Column 1 is beginning of scrolling region	ESC[?6h	ORIGINMODE RELATIVE
TEKORM (Overstrike/ Replace Mode)	*Reset:* Space and Underscore replace existing characters	ESC[<1l	DAMODE REPLACE
	Set: Underscore underlines existing characters and Space moves the cursor forward one space	ESC[<1h	DAMODE OVERSTRIKE
TEKSCNM (Screen Mode)	*Reset:* Normal colors; Index 0 transparent	ESC[?5l	SCREENMODE NORMAL
	Set: Reverse colors; Index 0 opaque	ESC[?5h	SCREENMODE REVERSE

[a] **You can also look up each of these modes as a separate command description under its mode name.**

^So (Shift Out)

Invokes the G1 character set.

Host: ^So

SR (Scroll Right)

Scrolls columns right.

Host: ^[number-of-columns ^SpA

number-of-columns: specifies the number of columns the dialog buffer scrolls to the right.

Defaults: Factory = (none)
Omitted or 0 = 1

You can scroll horizontally only when Column mode is set to 132.

Example: ^[12^SpA

SU (Scroll Up)

Scrolls lines up.

Host: ^[number-of-lines S

number-of-lines: specifies the number of lines the dialog buffer scrolls toward the top of the screen.

Defaults: Factory = (none)
Omitted or 0 = 1

Example: ^[12S

TBC (Tab Clear)

Clears one or more tab stops.

Host: ^[tab-clear-extent g

tab-clear-extent: specifies how many tab stops to clear:

- 0 Clears the horizontal tab stop at the cursor position
- 2 Clears all horizontal tab stops
- 3 Clears all horizontal tab stops

Defaults: Factory = (none)
Omitted = 0

Example: ^[2g

TEKDHL (Double Height Line)

Causes the line containing the cursor to become the top or bottom half of a double-height, double-width line.

Host

Top Half: **ESC#3**

Bottom Half: **ESC#4**

Both lines that receive these commands must contain the same characters. Since using double-width characters halves the number of characters per line, characters to the right of screen center are lost if the line was previously single width.

If the terminal receives the Bottom Half command without receiving the Top Half command first, the line will be double-width and single-height.

TEKDWL (Double Width Line)

Causes the line containing the cursor to become a double-width, single-height line.

Host: **ESC#6**

Since using double-width characters halves the number of characters available per line, characters to the right of screen center are lost if the line was previously single width.

TEKID (Identify Terminal)

Queries the terminal for what kind of terminal it is.

Host: **ESCZ**

Report: **ESC[?1;2c**

In response to this command, the terminal sends the report shown above, which says that the terminal is similar to a VT100 with Advanced Video Option.

This command causes the same response as the ANSI command DA (Device Attributes) with a parameter of 0.

The TEKID command is provided in ANSI mode only for compatibility with programs written for VT100 terminals. Avoid using this command if you can; its use violates ANSI and ISO standards — use DA instead.

TEKKPAM (Keypad Application Mode)

Causes the numeric keypad and Function Keys F5 — F8 to send special escape sequences.

Host: $^{E}C =$
Setup: **KEYPADMODE APPLICATION**

Table 6 lists the characters sent in Keypad Application mode.

TEKKPNM (Keypad Numeric Mode)

Causes the numeric keypad and Function Keys F5 — F8 to send their default values.

Host: $^{E}C>$
Setup: **KEYPADMODE NUMERIC**

Table 6 lists the characters sent in Numeric mode, which is the default mode for the numeric keypad and Function Keys F5 through F8.

Table 6
NUMERIC KEYPAD PROGRAMMING CODES

Numeric Keypad Key	Characters Sent in Application Mode	Characters Sent in Numeric Mode[a] (Default)
0	^{E}cOp	0
1	^{E}cOq	1
2	^{E}cOr	2
3	^{E}cOs	3
4	^{E}cOt	4
5	^{E}cOu	5
6	^{E}cOv	6
7	^{E}cOw	7
8	^{E}cOx	8
9	^{E}cOy	9
–	^{E}cOm	–
,	^{E}cOl	,
.	^{E}cOn	.
ENTER	^{E}cOM	^{C}R
F5	^{E}cOP	^{E}cOP
F6	^{E}cOQ	^{E}cOQ
F7	^{E}cOR	^{E}cOR
F8	^{E}cOS	^{E}cOS

[a] If these keys are programmed with macros and you haven't disabled key expansion, the macros rather than the characters listed in this column are sent.

TEKRC (Restore Cursor)

Restores the cursor position, graphic rendition, character set, and Origin mode previously saved using the TEKSC (Save Cursor) command.

Host: ^{E}C**8**

If the TEKSC (Save Cursor) command is not used first, TEKRC (Restore Cursor) returns the cursor to the Home position (Row 1, Column 1 of the dialog buffer) and restores the power-up graphic rendition, character set, and Origin mode.

TEKSC (Save Cursor)

Stores the cursor position, graphic rendition, character set, and Origin mode.

Host: ^{E}C**7**

The TEKRC (Restore Cursor) command restores the saved information.

TEKSTBM (Set Top and Bottom Margins)

Sets the dialog buffer's edit margins.

Host: ^{E}C**[** top-margin **;** bottom-margin **r**
Setup: **EDITMARGIN** top-margin,bottom-margin

top-margin: specifies the top margin of the scrolling region.
Defaults: Factory = 1
Omitted or 0 = 1

bottom-margin: specifies the the bottom margin of the scrolling region.
Defaults: Factory = 32
Omitted or 0 = last line of dialog area

Example: Host ^{E}C**[5;15r**
Setup **EDITMARGINS 5,15**

TEKSWL (Single Width Line)

Causes the current line to become a single-width, single-height line.

Host: ^{E}C**#5**

^{V}T (Vertical Tab)

Moves the cursor down one line without affecting the cursor position on the line.

Host: ^{V}T

VT52 COMMANDS

The VT52 commands that follow can be executed only while the terminal is in VT52 mode. You can put the terminal in VT52 mode by:

- Entering **CODE VT52** while in Setup
- Sending an RM command (**ESC[?2l**) from the host while in ANSI mode
- Sending a SELECT CODE command (**ESC%!3**) from the host while in TEK or ANSI mode

Once the terminal is in VT52 mode, it will recognize only VT52 commands (which are explained here) and the commands SELECT CODE, REPORT SYNTAX MODE, and ENQUIRY, which work in all host command modes.

CURSOR DOWN

Moves the cursor down one line without moving it horizontally.

Host: **ESCB**

If edit margins are set, the cursor moves down only as far as the bottom of the scrolling region.

CURSOR LEFT

Moves the cursor one column to the left.

Host: **ESCD**

The cursor does not move beyond the leftmost column (Column 1).

CURSOR RIGHT

Moves the cursor one column to the right.

Host: **ESCC**

The cursor does not move beyond the rightmost column.

CURSOR TO HOME

Moves the cursor to the home position.

Host: ^{E}cH

CURSOR UP

Moves the cursor up one line without moving it horizontally.

Host: ^{E}cA

If edit margins are set, the cursor moves up only as far as the top margin of the scrolling region.

DIRECT CURSOR ADDRESS

Moves the cursor to the specified row and column.

Host: ^{E}cY row column

row: specifies the destination row for the cursor. Must be an ASCII character whose ADE is the row number plus 31. Valid range is 32 (^{S}P) through 96 (`).

column: specifies the destination column for the cursor. Must be an ASCII character whose ADE is the column number plus 31. Valid range is 32 (^{S}P) through 96 (`).

The parameter values for *row* and *column* are ASCII characters that represent the row or column number plus 31. That is, ^{S}P (ADE 32), represents Row 1 or Column 1, while ` (ADE 96), represents Row 65 or Column 65.

Do not separate the parameters with a delimiter.

If a parameter is out of range, the cursor will not change position for that parameter. However, the cursor will move to the other parameter position if it is in the range.

Example: ^{E}cY"^{S}P

ENQUIRY

Queries the terminal for its answerback string.

Host: ^{E}Q

You can issue this command from any host command mode. The terminal does not respond to this command in Local mode.

ENTER ALTERNATE KEYPAD MODE

Causes the numeric keypad keys and Function Keys F5 through F8 to assume their Alternate Keypad mode meanings (shown in Table 7).

Host: $^{E}C =$

Any other meanings you program into these keys cannot be used as long as the terminal is in Alternate Keypad mode.

Table 7 shows the default characters transmitted by the numeric keypad keys and their Alternate Keypad mode meanings.

Table 7
ALTERNATE KEYPAD PROGRAMMING CODES

Numeric Keypad Key	Characters Sent as Factory Default[a]	Characters Sent in Alternate Keypad Mode
0	0	$^{E}C?p$
1	1	$^{E}C?q$
2	2	$^{E}C?r$
3	3	$^{E}C?s$
4	4	$^{E}C?t$
5	5	$^{E}C?u$
6	6	$^{E}C?v$
7	7	$^{E}C?w$
8	8	$^{E}C?x$
9	9	$^{E}C?y$
-	-	$^{E}C?m$
,	,	$^{E}C?l$
.	.	$^{E}C?n$
ENTER	^{C}R	$^{E}C?M$
F5	^{E}CP	^{E}CP
F6	^{E}CQ	^{E}CQ
F7	^{E}CR	^{E}CR
F8	^{E}CS	^{E}CS

[a] If these keys are programmed with macros and you haven't disabled key expansion, the terminal sends the macros rather than the characters listed in this column.

ENTER ANSI MODE

Places the terminal in ANSI mode.

Host: ESC<

The terminal will interpret all subsequent commands according to ANSI Standard X3.64.

ENTER GRAPHICS MODE

Selects the Rulings character set as the G0 character set.

Host: ESCF

The terminal remains in Graphics mode until you issue an EXIT GRAPHICS MODE command. If you issue the ENTER ANSI MODE command while the terminal is still in Graphics mode, the terminal first exits Graphics mode, then exits VT52 mode.

ERASE TO END OF LINE

Erases all characters from the cursor to the end of the current line.

Host: ESCK

The cursor position does not change.

ERASE TO END OF SCREEN

Erases all characters from the cursor to the end of the screen.

Host: ESCJ

The cursor position does not change.

This command ignores edit margins.

EXIT ALTERNATE KEYPAD MODE

Causes the numeric keypad keys and Function Keys F5 through F8 to assume their factory default meanings, or their programmed meanings if they have been programmed.

Host: ESC>

Factory default meanings are shown in Table 7 (under ENTER ALTERNATE KEYPAD MODE).

EXIT GRAPHICS MODE

Restores the G0 character set that was in effect before the current ENTER GRAPHICS MODE command was issued.

Host: ESCG

IDENTIFY

Identifies the terminal to the host.

Host: ^EcZ
Report: ^Ec/Z

In response to this command, the terminal sends the report shown above, which says that the terminal is a VT52.

REPORT SYNTAX MODE

Queries the terminal for a Terminal Settings Report that gives the terminal's current host command mode.

Host: ^Ec#!0

This command is recognized in all host command modes: ANSI, EDIT, TEK, and VT52. See *Reports* at the end of the 4100-style commands for information about Terminal Settings Reports.

REVERSE LINE FEED

Moves the cursor up one line without affecting the cursor position on the line.

Host: ^EcI

SELECT CODE

Selects the host command mode. (Can be saved in nonvolatile memory.)

Host: ^Ec%! syntax
Setup: **CODE** syntax

syntax: specifies the host command mode that you want to use:

Host	Setup	
0	TEK	Selects TEK mode
1	ANSI	Selects ANSI mode
2	EDIT	Selects EDIT mode
3	VT52	Selects VT52 mode

Defaults: Factory = (none)
Omitted = TEK

This command is recognized in all host command modes.

Example: Host ^Ec%!2
Setup **CODE EDIT**

4100-STYLE SYNTAX

COMMAND CONVENTIONS

All 4100-style command descriptions are consistently structured, using an easy-to-read set of syntax conventions. Following is a summary of the overall structure of the command descriptions and notation used to show syntax:

- Characters shown in bold type are those you must enter exactly as shown.
- Parameter names are shown on separate lines to make the syntax easier to read. However, when entering commands, follow these rules:
  - In Setup syntax, enter all parts of a command on the same line. The first character after the command name must be a space; use one or more spaces or a comma to separate parameters.
  - In host syntax, issue the ESC character (if required), the command's opcode, and any parameters. Do not separate parameters with spaces; use a space only if it is part of an encoded parameter.
- When the word *mode* is part of a parameter name, it usually indicates that the parameter is a toggle or switch with values such as *0* and *1*, or *yes* and *no*.

Individual descriptions of each parameter follow the syntax description. A parameter description includes the parameter type, range of valid values, and default values. Be sure you look at Tables 8 and 9, which describe the kind of value required for each parameter type.

Each parameter has up to two types of defaults:

- *Factory* — The value assigned a parameter when the terminal is shipped from Tektronix; parameters can be restored to this value by issuing the FACTORY command or running the Extended Self-Test program.
- *Omitted* — The value assigned a parameter if the command is issued and no value is specified for the parameter. You can only omit parameters in Setup syntax (see *Omitting Parameters*).

Any additional explanation, such as limitations and consequences of the command, follows the parameter descriptions. Parameter names always appear in italics.

(continued)

Many command descriptions show a typical example of the command in both host syntax and Setup syntax. Both the host example and the Setup example use the same parameter values, and thereby perform the same action.

You can save the settings of some commands by issuing the SAVE NONVOLATILE PARAMETERS command after you issue the command. The commands that you can save are identified with the phrase *Can be saved in nonvolatile memory*. You'll also find a list of these commands at the beginning of this guide.

Omitting Parameters

In host syntax, you must include all of the command's parameters for the terminal to execute the command properly.

In Setup syntax, you can omit parameters from most commands and the terminal will supply a default value. If the parameter is the only one in the command or is the last of two or more parameters, you simply omit it. To omit a parameter other than the last one, use commas to separate the location of the omitted parameter from adjacent parameters. For example, to omit the first parameter of the SET DIALOG AREA INDEX command, you enter:

DAINDEX ,2,3

To omit the second parameter, you enter:

DAINDEX 1,,3

Encoding Parameters

In host syntax, you must encode parameters as described in Table 8.

Figures 1 and 2 are examples of one method of manually encoding host parameters. Refer to the Programmers Reference Manual for other methods, including a bit-packing scheme written in FORTRAN.

Decimal –2413

= binary 000010 010110 1101

Hi-I Hi-I Lo-I

			ASCII Character	ADE
Hi-I	1 | 000010	=	B	66
Hi-I	1 | 010110	=	V	86
Lo-I	01 | 0 | 1101	=	–	45

↑
sign

Decimal –2413
Encoded form BV–

Figure 1. How to Encode Integer Parameters.

(53, 1000)

X-Coordinate = decimal 53

= binary 00000 01101 01

Hi-X Lo-X Second Extra

Y-Coordinate = decimal 1000

= binary 00111 11010 00

Hi-Y Lo-Y First Extra

				ASCII Character	ADE
Hi-Y	01 | 00111		=	'	39
		First Extra	Second Extra		
Extra	110	00	01	=	a	97
Lo-Y	11 | 11010			=	z	122
Hi-X	01 | 00000			=	S_P	32
Lo-X	10 | 01101			=	M	77

XY-Coordinate = ' a z S_P M

Figure 2. How to Encode XY-Coordinates.

Table 8
HOST PARAMETER TYPES

Type	Description	Examples
Character	An ASCII character in the ranger ^{S}P through ~ (tilde) (ADE 32 — 126).	a
Integer	A sequence of up to three ASCII characters, in the range ^{S}P through ^{D}T (ADE 32 — 127), that represent the value of an integer number. (See Figure 1.)	BV-
XY-Coordinate	A sequence of up to five ASCII characters that represents the numerical values of both the x- and y-coordinates. (See Figure 2.)	' az^{S}PM
Integer Array	A sequence of encoded integer parameters, beginning with an array count and followed by the elements of the array.	415!A0
Real	A pair of encoded integer parameters that express the mantissa and exponent (power of two) of a fractional value. The parameter's value is equal to the mantissa multiplied by 2 raised to the power of the exponent, as in 3×2^{1}	3!
String	A group of ASCII characters sent as an array, beginning with an array count, and followed by the characters of the string.	8PRESS^{S}PF2
XY-Array	A sequence of encoded xy-coordinates beginning with an array count and followed by the xy-coordinates.	2+ ' w#]7 ' n/T

Table 9
SETUP PARAMETER TYPES

Type	Description	Examples
Character	An ASCII character in the range ^{S}P through ~ (tilde) (ADE 32 — 126). Enter the actual character or its ADE value.	a 97
Integer	A decimal number.	2400
Small Integer	An integer parameter in the range ^{N}U through ^{D}T (ADE 0 — 127). Enter either the actual character or its ADE value. (ADE values in the range 0 — 9 must be preceded by 0.)	09
XY-Coordinate	The decimal values of *x* and *y*.	500,500
Keyword	A word that specifies what action you want a command to perform. Can be entire keyword or just as many characters as are necessary to distinguish it from other keywords.	yes no
Key Specifier	A keystroke or the characters on a key's label, which identify a key.	F2
Integer Array	A sequence of integers separated with spaces or a comma. (If a command requires more than one array, surround each array with angle brackets.)	5,10,15 <3,4>,<7,8>
String	A group of any alphanumeric or symbol characters on the terminal keyboard. Enter the actual characters, rather than ADE values.	abc
Delimited String	A string of keyboard characters preceded by a delimiter and followed by the same delimiter.	/abc/
Real	A fractional value expressed as a pair of decimal integers — the mantissa, and the exponent. The parameter's value is equal to the mantissa multiplied by 2 raised to the power of the exponent, as in 3×2^{-1}.	3,-1
XY-Array	A sequence of xy-coordinates, each coordinate separated by spaces or a comma.	50,150,200,300

BASE COLOR (CX Only)

Determines whether the terminal displays information in two or four colors. (Can be saved in nonvolatile memory.)

Setup: **BASECOLOR** color-mode

color-mode: keyword; specifies how the terminal displays field attributes. Valid entries are:

monochrome	Displays field attributes as two colors: green and white
base	Displays field attributes as four colors: red, green, blue, and white

Defaults: Factory = base
Omitted = No change

This command operates the same as the Base Color Switch on an IBM 3279 Terminal. If the terminal is in Extended Color mode, the BASE COLOR command has no effect.

This command only affects the screen in HOSTPORT COAX, and you won't see the effect until you exit Setup.

BEGIN GRAPHTEXT CHARACTER

Starts the definition of a graphtext character.

Host: **EcST** font-number character-number
Setup: **GTBEGIN** font-number character-number

font-number: integer; specifies a font number for the character being defined. Valid range is 0 through 32767.
Defaults: Factory = (none)
Omitted = 0

character-number: integer; specifies the ADE of the character being defined. Must be in the range 32 through 126.
Defaults: Factory = (none)
Omitted = Error

Example: Host **EcST4D1**
Setup **GTBEGIN 4,65**

BEGIN HIGHER SEGMENT

Ends the current segment definition and begins a new segment definition.

Host: ^cSN
Setup: **SGUP**

The pivot point and position of the new segment are set to the graphics position. The segment number is set to the next higher sequential number. The first Pick ID is set to 1.

BEGIN LOWER SEGMENT

Ends the current segment definition and begins a new segment definition.

Host: ^cSB
Setup: **SGDOWN**

The pivot point and position of the new segment are set to the graphics position. The segment number is set to the next lower segment number. The first Pick ID is set to 1.

BEGIN NEW SEGMENT

Begins a new segment definition, closing the current segment definition if one is open.

Host: ^cSE segment-number
Setup: **SGNEW** segment-number

segment-number: integer; specifies the new segment number. Valid segment numbers are 1 through 32767.
Defaults: Factory = (none)
Omitted = Error

The pivot point and position of the new segment are set to the graphics position. The Pick ID is set to 1.

Example: Host ^cSEA0
Setup **SGNEW 16**

BEGIN PANEL BOUNDARY

Starts a panel definition.

Host: ^[E]cLP first-point
draw-boundary
Setup: **BEGINPANEL** first-point
draw-boundary

first-point: xy-coordinate; indicates the first point in a panel boundary. Valid range is 0 through 4095 for both the x- and y-coordinates.

Defaults: Factory = (none)
Omitted = 0,0

draw-boundary: integer; specifies whether the fill pattern covers the panel boundary. Valid values are:

0 The fill pattern covers the panel boundary
1 The boundary is displayed around the finished panel, using the current line style and line index

Defaults: Factory = (none)
Omitted = 0

You cannot draw a marker during a panel definition.

If you define a panel while a segment is open, the panel definition will be saved as part of the segment definition.

Example: Host ^[E]cLP ' az^[S]p^[P]M1
Setup **BEGINPANEL 53,1000,1**

BEGIN PIXEL OPERATIONS

Sets up the terminal for subsequent pixel operations.

Host: ^[E]cRU surface-number
ALU-mode
bits-per-pixel
Setup: **PXBEGIN** surface-number
ALU-mode
bits-per-pixel

surface-number: integer; specifies the surface on which subsequent pixel commands will write (or read) data. Valid values are:

−1 The super surface (all bit planes of all surfaces)
0 The current surface
1 — 4 A particular surface

Defaults: Factory = 1
Omitted = 0

ALU-mode: integer; specifies the writing mode. Valid values are:

0	No change
7	XOR mode
11	Replace mode
12	AND mode
15	OR mode

Defaults: Factory = 11
Omitted = 0

bits-per-pixel: integer; specifies the number of bits used to encode the color index for each pixel in subsequent RASTER WRITE and RUNLENGTH WRITE commands. Valid values are 0, 1, 2, 3, 4, and 6; 0 means no change.
Defaults: Factory = 6
Omitted = 0

This command sets values used in the RASTER WRITE, RUNLENGTH WRITE, RECTANGLE FILL, and PIXEL COPY commands.

Example: Host **ESCRU1<6**
Setup **PXBEGIN 1,12,6**

BEGIN SEGMENT

Begins a new segment definition.

Host: **ESCSO** segment-number
Setup: **SGOPEN** segment-number

segment-number: integer; specifies the segment number. Valid segment numbers are 1 through 32767.
Defaults: Factory = (none)
Omitted = Error

The pivot point is set to the most recently defined pivot point and the Pick ID is set to 1.

Example: Host **ESCSOB0**
Setup **SGOPEN 32**

CALL SEGMENT

Calls a segment as a subroutine.

Host: **EcSF** segment-number
position
attributes

Setup: **SGCALL** segment-number
position
attributes

segment-number: integer; specifies the segment to be called. Valid values are:

–3	All segments that match the current matching class
–1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error SF11

position: xy-coordinate; specifies where to position the called segment's pivot point. Valid range for both x and y is 0 through 4095.

Defaults: Factory = (none)
Omitted = 0,0

attributes: integer: controls how the terminal treats primitive attributes before and after the segment call. Valid values are:

Host	Setup	
0	none	The called segment's attributes are not retained after the call (attributes are restored to the values in effect before the calls).
1	modify	The called segment's attributes are retained after the call.
2	reset	Current attributes are temporarily reset to factory values before the call and restored after the call.
3	both	Current attributes are reset to factory values and the called segment's attributes are retained after the call.

Defaults: Factory = 0
Omitted = 0

The called segment is treated as a graphics primitive within the currently open segment.

The called segment's position, scale and rotation result from:

1. The image transform of the called segment
2. The scale and rotation set for all subsequent called segments (Segment -5)
3. The image transform set for all segments not yet defined (Segment -2)

Example: Host $^{E}_{C}$**SF2 ' az**$^{S}_{P}$**M1**
Setup **SGCALL 2,53,1000,MODIFY**

CANCEL

Stops terminal activity and resets several terminal parameters and modes to their default values.

Host: $^{E}_{C}$**KC**
Setup: **CANCEL**

This command has the same effect as pressing the Cancel key. It puts the terminal in Alpha mode, and terminates GIN and all of the following modes: Vector, Marker, Bypass, Prompt, and Snoopy.

The CANCEL command also unlocks the keyboard, terminates any copy function currently in progress, and flushes input and output queues (characters not yet sent to the host will be discarded).

CAPITALS (CX Only)

Specifies whether the terminal displays alphabetic characters as all uppercase or both uppercase and lowercase. (Can be saved in nonvolatile memory.)

Setup: **CAPITALS** capitals-mode

capitals-mode: keyword. Valid entries are:

yes	Displays all alphabetic characters uppercase
no	Displays alphabetic characters with mixed case

Defaults: Factory = No
Omitted = No

The CAPITALS command operates like the Capitals/Mixed-Case switch on the IBM 3279 Terminal.

This command only affects the screen in HOSTPORT COAX, and you won't see the effect until you exit Setup.

CLEAR DIALOG SCROLL

Erases the dialog buffer.

Host: ^cLZ
Setup: **CLEARDIALOG**

Issuing CLEAR DIALOG SCROLL has the same effect as pressing the terminal's D Eras key.

CLICK (CX Only)

Turns the keyboard key click on or off. (Can be saved in nonvolatile memory.)

Setup: **CLICK** click-mode

click-mode: keyword. Valid entries are:
- no Turns off key click
- yes Turns on key click

Defaults: Factory = No
Omitted = No

When *click-mode* is on, all keys click except Alt, Ctrl, Shift, Caps Lock, Reset, and the Joydisk.

When you enter HOSTPORT COAX, the IBM 3270-style controller will override the setting made with this command. When in HOSTPORT COAX, use the Click key instead.

COPY

Sends data from the host port to the COPIER port or one of the 2PPI ports, or from one of the 2PPI ports to the host port or the COPIER port.

Host: ^c**JC** source
separator
destination
Setup: **COPY** source
separator
destination

source: string; specifies the data source. Must be one of the following:
- HO: The host port
- P0: PORT 0
- P1: PORT 1

Defaults: Factory = (none)
Omitted = Error JC11

separator: string; separates the source and destination parameters. It may be omitted in Setup syntax or be an empty string in host syntax. If included, must be the string *TO* (in uppercase or lowercase).

Defaults: Factory = (none)
Omitted = Error JC21

destination: string; specifies the destination port. Must be one of the following:

HC: The COPIER port
HO: The host port
P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error JC31

You can issue the COPY command in Setup, but it is not recommended practice.

Your application is responsible for including the EOF string which terminates the copy operation at the end of files; if you omit the EOF string, the terminal continues copying until the Cancel key is pressed.

On CX Terminals, *HO:* is whichever host you've selected with the HOST PORT command.

Example: Host $^{E}_{C}$**JC3HO:2TO3P0:**

CRLF

Specifies whether a $^{C}_{R}$ character also implies a $^{L}_{F}$ character. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**KR** crlf-mode
Setup: **CRLF** crlf-mode

crlf-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	$^{C}_{R}$ does not imply $^{L}_{F}$
1	yes	$^{C}_{R}$ implies $^{L}_{F}$

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

When $^{C}_{R}$ implies $^{L}_{F}$, the $^{L}_{F}$ is sent only to the terminal screen, not to the host.

CURSOR TYPE

Selects either an underline or a block as the alpha cursor. (Can be saved in nonvolatile memory.)

Setup: **CURSORTYPE** cursor-mode

cursor-mode: keyword; specifies how the alpha cursor is displayed. Valid entries are:

underline	Selects the underline
block	Selects the block

Defaults: Factory = Underline
Omitted = No change

On CX Terminals, when you enter HOSTPORT COAX, the IBM 3270-style controller will override the setting made with this command. To change the cursor in HOSTPORT COAX, use the Alt Cr key.

CX KEYPAD (CX Only)

Determines whether the numeric keypad transmits numbers or programmed functions while in HOSTPORT COAX. (Can be saved in nonvolatile memory.)

Setup: **CXKEYPAD** keypad-mode

keypad-mode: keyword; specifies how the keypad operates. Valid entries are:

pf	Keypad keys (unshifted and shifted) act as IBM programmable function keys PF13 through PF24.
numeric	Keypad keys (unshifted and shifted) emulate the unshifted keys for numeric digits 0 — 9, the period, and the comma.
both	Unshifted keypad keys function as IBM programmable function keys PF13 through PF24; shifted keypad keys emulate the numeric digits 0 — 9, the period, and the comma.

Defaults: Factory = pf
Omitted = pf

This command only affects the keypad while in HOSTPORT COAX, and does not take effect until you exit Setup.

DEFINE MACRO

Creates or deletes a volatile macro.

Host: **EcKD** macro-number
macro-contents
Setup: **DEFINE** macro-number
string

macro-number: integer (key specifier or integer in Setup); specifies the number of the macro being defined. Valid range is -150 through 32767 (except -1) for all terminals, plus -230 through -179 for CX Terminals. Specifying -1 or the keyword *all* deletes all volatile macros.
Defaults: Factory = (none)
Omitted = 0

macro-contents: integer array; specifies ADEs that represent the characters defining the macro. Each integer in the array must be in the range 0 through 127. (Host syntax only.)
Defaults: Factory = (none)
Omitted = Empty array

string: delimited string; defines the macro. The string must consist of characters whose ADEs are in the range 0 through 127. (Setup syntax only.)
Defaults: Factory = (none)
Omitted = Empty string

In Setup, you must precede a CR or any special editing characters in the macro definition with the *literal character,* which is set with the SET EDIT CHARACTERS command.

To delete a macro in either host or Setup syntax, issue the DEFINE MACRO command with the macro's number, but without the macro definition.

The keyboard layouts at the end of this Reference Guide show the macro numbers assigned to the terminal's keys.

Example: Host **EcKDH03E8E9E:**
Setup **DEFINE F1,/XYZ/**

DEFINE NONVOLATILE MACRO

Creates or deletes both the volatile and nonvolatile versions of a macro.

Host: **ESCKO** macro-number
macro-contents
Setup: **NVDEFINE** macro-number
string

macro-number: integer (key specifier or integer in Setup); specifies the number of the macro being defined. Valid range is -150 through 32767 (except -1) for all the terminals, plus -230 through -179 for CX Terminals. Specifying -1 or the keyword *all* deletes all nonvolatile macros.
Defaults: Factory = (none)
Omitted = 0

macro-contents: integer array; specifies ADEs that represent the characters defining the macro. Each integer in the array must be in the range 0 through 127. (Host syntax only.)
Defaults: Factory = (none)
Omitted = Empty array

string: delimited string; defines the macro. The string must consist of characters whose ADEs are in the range 0 through 127. (Setup syntax only.)
Defaults: Factory = (none)
Omitted = Empty string

To actually save or delete a macro in nonvolatile memory, you must issue the SAVE NONVOLATILE PARAMETERS command before you (1) reset or turn off the terminal or (2) issue the FACTORY or RESET command.

Example: Host **ESCKOH03E8E9E:**
ESCKU
Setup **NVDEFINE F1,/XYZ/**
NVSAVE

DELETE GRAPHTEXT CHARACTER

Deletes a user-defined character from a graphtext font.

Host: **EcSZ** font-number
character-number
Setup: **GTDELETE** font-number
character-number

font-number: integer; specifies the font the character belongs to. Valid values are:

-1	All fonts
0 — 32767	A particular font

Defaults: Factory = (none)
Omitted = 0

character-number: integer; specifies which character to delete. Valid values are:

-1	All characters
32 — 126	A particular character

Defaults: Factory = (none)
Omitted = Error

Example: Host **EcSZ4D1**
Setup **GTDELETE 4,65**

DELETE PART OF SEGMENT

Deletes Pick groups from a segment.

Host: **EcUD** segment-number
first-Pick-ID
last-Pick-ID

Setup: **SGREMOVE** segment-number
first-Pick-ID
last-Pick-ID

segment-number: integer; specifies the segment that the Pick group (or groups) will be deleted from. Valid range is 1 through 32767.

Defaults: Factory = (none)
Omitted = Error

first-Pick-ID: integer; specifies the ID of the first Pick group to delete. Must be one of the following:

-1	The segment end
1 — 32767	A specific Pick group

Defaults: Factory = (none)
Omitted = Error

last-Pick-ID: integer; specifies the ID of the last Pick group to delete. Must be one of the following:

-1	The segment end
1 — 32767	A specific Pick group

Defaults: Factory = (none)
Omitted = Error

This command deletes the part of a segment between two Pick groups specified as *first-Pick-ID* and *last-Pick-ID*. If a given Pick ID occurs more than once in a segment, the terminal selects the first occurrence of that Pick ID.

To delete just one Pick group, use its Pick ID as both the *first-Pick-ID* and *last-Pick-ID* parameter values.

You cannot delete a Pick group that contains an END PANEL command unless the corresponding BEGIN PANEL command is in a Pick group that is also being deleted. Also, you cannot delete a range of Pick groups that contains just part of an included copy of a segment.

Example: Host **EcUD377**
Setup **SGREMOVE 3,7,7**

DELETE SEGMENT

Deletes a segment from memory.

Host: **EcSK** segment-number
Setup: **SGDELETE** segment-number

segment-number: integer; specifies the number of the segment to be deleted. Valid values are:

-3	All segments that match the current matching class
-1	All segments (except Segment 0)
1 — 32767	A specific segment

Defaults: Factory = (none)
Omitted = Error

If you issue this command while defining a segment, the terminal first ends the segment definition and then deletes the segment.

Hint. To delete all segments and all views, it's faster to delete views first, and then delete segments. It's also faster to set the fixup level to 0, delete the segments, renew the view, and then restore the original fixup level.

Example: Host **EcSKA0**
Setup **SGDELETE 16**

DELETE VIEW

Deletes a view.

Host: **EcRK** view-number
Setup: **VDELETE** view-number

view-number: integer; specifies the view to be deleted. Valid values are:

-1	All views
0	The current view
1 — 64	A specific view

Defaults: Factory = (none)
Omitted = 0

Example: Host **EcRKA0**
Setup **VDELETE 16**

DIM ENABLE

Turns the automatic screen-dimming feature on or off. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**KG** dim-code
Setup: **DIM** dim-code

dim-code: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Disables automatic dim feature
1	yes	Dims screen after five minutes of no interaction

Defaults: Factory = 1 (yes)
Omitted = 0 (no)

DISABLE GIN

Terminates graphics input (GIN).

Host: $^{E}_{C}$**ID** device-function-code
Setup: **GINDISABLE** device-function-code

device-function-code: integer; identifies which device and function to disable (see REPORT GIN POINT for valid codes). Specifying –1 disables all GIN devices.
Defaults: Factory = (none)
Omitted = (none)

When GIN is disabled, the terminal sends one last GIN report.

Example: Host $^{E}_{C}$**ID8**
Setup **GINDISABLE 8**

DRAW

Draws a vector from the current graphics position to a new graphics position.

Host: $^{E}_{C}$**LG** position
Setup: **DRAW** position

position: xy-coordinate; indicates the point to draw to. Valid range is 0 through 4095 for both the x- and y-coordinates.
Defaults: Factory = (none)
Omitted = 0,0

Example: Host $^{E}_{C}$**LG** ^{I}**az**$^{S}_{P}$**M**
Setup **DRAW 53,1000**

DRAW CURVE

Draws a curve through a list of points, starting at the current graphics position.

Host: ^cUC curve-type
list-of-points
Setup: **CURVE** curve-type
list-of-points

curve-type: integer; specifies the type of curve to be drawn. Must be one of the following:

Host	Setup	
1	arc	Simple curve
2	chord	Curve plus a chord drawn between the first and last point of each arc
3	pie	Curve plus two vectors, one drawn from the last point of the arc to the center of the circle and the other vector drawn from the center of the circle back to the first point of the arc (the graphics position is left at the first point of the arc)

Defaults: Factory = (none)
Omitted = Error

list-of-points: xy-array; specifies the points through which the arcs will be drawn. Valid range for each coordinate is 0,0 through 4095,4095.
Defaults: Factory = (none)
Omitted = Error

This command draws a sequence of connected arcs, continuing until the *list-of-points* array is exhausted. Since the command always uses the current graphics position as the first of three points needed to define each arc, the *list-of-points* array must contain an even number of xy-coordinates.

See also SET CURVE SMOOTHNESS.

Example: Host ^cUC12+'w#]7'n/T
Setup **CURVE ARC,500,1500,2000,3000**

DRAW MARKER

Draws a marker at a specified location.

Host: ^cLH marker-position
Setup: **MARKER** marker-position

marker-position: xy-coordinate; specifies where you want the marker drawn. Valid range is 0 through 4095 for both the x- and y-coordinates.
Defaults: Factory = (none)
Omitted = 0,0

Example: Host ^cLH'az^sPM
Setup **MARKER 53,1000**

ENABLE DIALOG AREA

Enables or disables the dialog area. (Can be saved in nonvolatile memory.)

Host: ^{E}c**KA** mode
Setup: **DAENABLE** mode

mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Disables the dialog area
1	yes	Enables the dialog area

Defaults: Factory = 1 (yes)
Omitted = 1 (yes)

Table 10
EFFECTS OF ENABLE DIALOG AREA

Feature	Dialog Area Disabled	Dialog Area Enabled
G Eras Key, S Eras Key, or PAGE Command	Erases the graphics area (S Eras also erases the dialog area) Takes the terminal out of GIN Resets the terminal to line style 0 Sets the current position to the home position (0,3071)[a] Puts the terminal in Alpha mode	Erases the graphics area (S Eras also erases the dialog area)
^{C}R Character	Puts the terminal in Alpha mode Performs a carriage return action Resets the terminal line style to 0 Takes the terminal out of GIN	If the terminal is in Alpha mode, performs a carriage return in the dialog area No action if the terminal is in Vector or Marker mode

[a] **For CX Terminals, the home position is 0,3071 in HOSTPORT RS-232, and 0,3045 in HOSTPORT COAX.**

ENABLE GIN

Enables the terminal for graphics input (GIN).

Host: ^{E}cIE GIN-code
number-of-GIN-reports
Setup: **GINENABLE** GIN-code
number-of-GIN-reports

GIN-code: integer; identifies a device and function combination and specifies whether reports are sent only on key press or on both key press and key release. Tables 11 and 12 list all valid GIN codes.
Defaults: Factory = (none)
Omitted = 0

number-of-GIN-reports: integer; specifies how many GIN reports can be sent before GIN automatically disables. Valid range is 0 through 65535 (0 specifies 65535 GIN reports).
Defaults: Factory = (none)
Omitted = 65535

(continued)

Table 11
GIN CODES FOR KEY PRESS ONLY

Device [a]	Function		
	Locate	Pick	Stroke
Joydisk	0	1	Not valid
Tablet PORT 0 (Absolute)	8	9	10
Tablet PORT 1 (Absolute)	16	17	18
Tablet PORT 0 (Relative)	48	49	Not valid
Tablet PORT 1 (Relative)	56	57	Not valid

[a] Only one device may be enabled on a given port at any time.

Table 12
GIN CODES FOR BOTH KEY PRESS AND KEY RELEASE

Device [a]	Function		
	Locate	Pick	Stroke
Joydisk	Not valid	Not valid	Not valid
Tablet PORT 0 (Absolute)	2056	2057	Not valid
Tablet PORT 1 (Absolute)	2064	2065	Not valid
Tablet PORT 0 (Relative)	2096	2097	Not valid
Tablet PORT 1 (Relative)	2104	2105	Not valid

[a] Only one device may be enabled on a given port at any time.

CAUTION

Don't enable GIN with both the ENABLE GIN and ENABLE 4010 GIN commands. If you do, the terminal may transmit invalid GIN data.

If you use a GIN code from Table 11, reports are sent only in response to key presses. If you use a GIN code from Table 12, reports are sent in response to key releases as well as key presses.

You can't select key-press-and-release GIN for a device if you have also selected either GIN Inking or GIN Rubberbanding for that device.

When you use the Joydisk as the GIN device, you may want to disable key expansion. Otherwise, if the user presses any key with a macro defined for it, the terminal will treat the macro contents as graphics input, generating one GIN report for each character in the macro.

Example: Host **ᴱcIE85**
Setup **GINENABLE 8,5**

ENABLE KEY EXPANSION

Enables or disables key macros.

Host: **ᴱcKW** mode
Setup: **KEYEXPAND** mode

mode: integer; (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Disables key expansion
1	yes	Enables key expansion

Defaults: Factory = 1 (yes)
Omitted = 1 (yes)

While key expansion is disabled, all programmed keys temporarily revert to their default values.

The host can expand any macro, including key macros, even when key expansion is disabled.

ENABLE 4010 GIN

Enables the terminal for one 4010 GIN Report.

Host: $^{E}C^{S}B$

This command provides compatibility with programs written for earlier Tektronix terminals.

Don't enable GIN with both the ENABLE GIN and ENABLE 4010 GIN commands. If you do, the terminal may transmit invalid GIN data.

END GRAPHTEXT CHARACTER

Ends a graphtext character definition.

Host: ^{E}cSU
Setup: **GTEND**

END PANEL

Ends a panel definition.

Host: ^{E}cLE
Setup: **ENDPANEL**

This command closes the panel boundary, fills the panel with the current fill pattern, and sets the graphics position to the panel boundary's starting point.

END SEGMENT

Ends a segment definition.

Host: ^{E}cSC
Setup: **SGCLOSE**

When you end a segment it becomes visible in the current view.

Hint. If you are defining a panel within a segment, you don't need to issue an END PANEL command because the END SEGMENT command ends both the panel definition and the segment definition.

ENQUIRY

Queries the terminal for its answerback string.

Host: ^{E}Q

The ENQUIRY command invokes the answerback string in any host command mode (ANSI, EDIT, VT52, or TEK mode). The terminal does not respond to this command in Local mode.

If the host provides an echo and you don't want the answerback string displayed on the terminal, issue the ENTER BYPASS MODE command before issuing the ENQUIRY command.

Note that, in TEK mode, the ^{E}Q character is a command terminator (like ^{E}C, ^{F}S, ^{G}S, and ^{U}S).

ENTER ALPHA MODE

Puts the terminal in Alpha mode.

Host: ^{U}S

When the terminal is in Alpha mode, it interprets and displays ASCII characters as alphatext.

ENTER BYPASS MODE

Puts the terminal in Bypass mode.

Host: $^{E}C^{C}N$

When the terminal is in Bypass mode, it ignores all characters from the host until it receives the bypass cancel character. If the bypass cancel character is set to ^{N}U, then Bypass mode is disabled and the ENTER BYPASS MODE command has no effect.

ENTER MARKER MODE

Puts the terminal in Marker mode.

Host: ^{F}S

When the terminal is in Marker mode, it interprets ASCII characters as xy-coordinates and draws markers at the locations specified by the coordinates.

ENTER VECTOR MODE

Puts the terminal in Vector mode.

Host: ^{G}s

When the terminal is in Vector mode, it interprets ASCII characters as xy-coordinates. The terminal moves the graphics position to the first xy-coordinate, and draws vectors to the subsequent xy-coordinates.

The terminal cannot go directly from Marker mode to Vector mode. Therefore, you must first put the terminal in Alpha mode, then in Vector mode.

EXPAND MACRO

Expands a macro.

Host: ^{E}c**KX** macro-number
Setup: **EXPAND** macro-number

macro-number: integer; indicates the macro to expand. Valid range is from -150 through 32767 (except -1) for all terminals, plus -230 through -179 for CX Terminals.
Defaults: Factory = (none)
Omitted = 0

Example: Host ^{E}c**KXH0**
Setup **EXPAND 128**

FACTORY

Sets all parameters to their factory default values and takes the terminal out of Setup.

Setup: **FACTORY**

This command restores the terminal to its factory default condition and erases the contents of the terminal's volatile memory, including all changes in parameter settings and all volatile macro definitions.

Hint. If you've saved settings in nonvolatile memory and want to return all settings to their factory default, issue the FACTORY command and then issue the SAVE NONVOLATILE PARAMETERS command.

GRAPHIC TEXT

Writes a string of graphtext in the graphics area, starting at the current graphics position.

Host: ^cLT text
Setup: **GTEXT** text

text: string (delimited string in Setup); indicates the characters to be displayed. Valid range for each character is ADE 32 through 126 (SP through ~).
Defaults: Factory = (none)
Omitted = 0

Example: Host ^cLT7UNICORN
Setup **GTEXT /UNICORN/**

HARDCOPY

Copies the contents of the terminal's screen (or just the dialog area) to a hard copy unit.

Host: ^cKH hardcopy-code

hardcopy-code: integer; selects the portion of the display that is copied. Valid values are:

0 or 1	Copies the entire screen
2	Produces a positive copy of the entire screen
3	Copies only the dialog area

Defaults: Factory = (none)
Omitted = 0

This command has the same effect as pressing the S Copy, Ctrl with S Copy, or D Copy keys (*hardcopy-codes* 0 or 1, 2, and 3, respectively).

When you're using a monochrome text printer, you must specify *hardcopy-code 3,* since a monochrome text printer can only make dialog copies.

To copy only the graphics area, first make the dialog area invisible, then use the HARDCOPY command with a parameter of 0 or 1 (from the keyboard press the S Copy key).

Example: Host ^cKH3

HELP

Displays information about a command or cluster of commands.

Setup: **HELP** name

name: string; specifies either a Setup command name or the name of a cluster of commands for which you want information.

Defaults: Factory = (none)
Omitted = All commands

If you enter a cluster name, the terminal displays help information about all commands in that category. The cluster names are:

- ANSI
- COAX
- Communications
- Dialog
- General
- Graphics
- Hardcopy
- Keyboard
- Pixels
- Report/Input
- Segments
- Surfaces
- Views
- 2PPI

Example: Setup **HELP SEGMENTS**

HOST PORT (CX Only)

Selects the port used for host/terminal communications. (Can be saved in nonvolatile memory.)

Setup: **HOSTPORT** port

port: keyword. Valid entries are:

COAX Selects coax host connection (IBM)
RS-232 Selects RS-232 host connection

Defaults: Factory = COAX
Omitted = No change

When you issue HOSTPORT COAX, the terminal emulates an IBM 3279 with the following configuration:

- Keyboard set to emulate an IBM 3279 keyboard
- Dialog area enabled and visible
- Dialog area set to 32 lines and 80 columns
- Operator Information Area of two lines created at the bottom of the dialog area
- Dialog area buffer set to 32 lines
- First and second alpha cursor indices set to 1 and 0, respectively

When you issue HOSTPORT RS-232, the terminal configures itself using the most recently issued settings, including those settings made in HOSTPORT COAX that affect HOSTPORT RS-232.

IGNORE DELETES

Determines whether the terminal ignores the ^{D}T (Delete) character. (Can be saved in nonvolatile memory.)

Host: ^{E}C**KI** ignore-deletes-mode
Setup: **IGNOREDEL** ignore-deletes-mode

ignore-deletes-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Terminal doesn't ignore ^{D}T characters
1	yes	Terminal ignores ^{D}T character

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

INCLUDE COPY OF SEGMENT

Copies another segment into the segment currently being defined.

Host: ^{E}C**LK** segment-number
Setup: **SGINCLUDE** segment-number

segment-number: integer; specifies the number of the segment to be included. Valid values are:

–3	All segments that match the current matching class
–1	All segments
1 — 32767	A specific segment

Defaults: Factory = (none)
Omitted = Error

Example: Host ^{E}C**LKA0**
Setup **SGINCLUDE 16**

INSERT INTO SEGMENT

Opens an existing segment so you can insert new primitives and primitive attributes.

Host: **EcUI** segment-number
Pick-ID
sequence

Setup: **SGINSERT** segment-number
Pick-ID
sequence

segment-number: integer; specifies the segment to be opened. Valid range is 1 through 32767.

Defaults: Factory = (none)
Omitted = Error

Pick-ID: integer; specifies the ID of the Pick group at which the insertion will occur. Must be one of the following:

–1	The segment end
1 — 32767	A specific Pick group

Defaults: Factory = (none)
Omitted = Error

sequence: integer; specifies where the insertion occurs with respect to the Pick group. Must be one of the following:

Host	Setup	
0	before	Insert just before the specified Pick group
1	end	Insert just after the specified Pick group
2	after	Insert just after the Pick point that begins the specified Pick group

Defaults: Factory = 0 (before)
Omitted = 0 (before)

You can choose whether the primitive attributes and graphics position that you define during the insertion affect the primitives that follow the insertion in the opened segment (see the SET SEGMENT EDIT MODE command).

You can only insert graphic primitives and primitive attributes in an included segment if that segment has not been transformed.

Example: Host **EcUI361**
Setup **SGINSERT 3,6,END**

LEARN

Programs a key from the keyboard.

Setup: **LEARN**

When you issue this command, the terminal prompts you for the key and string you want programmed.

A key programmed with the LEARN command remains programmed only until the terminal is turned off. If you want a key to remain programmed when the power is off, use the LEARN NONVOLATILE command.

LEARN NONVOLATILE

Programs a key from the keyboard so that the definition can be stored in nonvolatile memory.

Setup: **NVLEARN**

Key definitions programmed with the LEARN NONVOLATILE command are saved in nonvolatile memory only if you issue a SAVE NONVOLATILE PARAMETERS command before you (1) reset or turn off the terminal or (2) issue the FACTORY or RESET command.

LFCR

Specifies whether a $^{L}_{F}$ character also implies a $^{C}_{R}$. (Can be saved in nonvolatile memory.)

Host: $^{E}_{c}$**KF** lfcr-mode
Setup: **LFCR** lfcr-mode

lfcr-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	$^{L}_{F}$ does not imply $^{C}_{R}$
1	yes	$^{L}_{F}$ implies $^{C}_{R}$

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

This setting affects only a $^{L}_{F}$ sent to the terminal screen, the implied $^{C}_{R}$ character is not sent to the host.

LOCAL

Enters or exits Local mode.

Setup: **LOCAL** local-mode

local-mode: keyword. Valid entries are:

yes Initiates Local mode
no Cancels Local mode

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

LOCK KEYBOARD

Locks or unlocks the keyboard.

Host: ^{E}c**KL** locking-mode

locking-mode: integer. Valid values are:

0 Unlocks the keyboard
1 Locks the keyboard

Defaults: Factory = 0
Omitted = 0

This command disables all the keyboard keys except Cancel and Break.

LOCK VIEWING KEYS

Locks and unlocks the viewing keys used for Zoom and Pan.

Host: ^{E}c**RJ** locking-mode
Setup: **LOCKVIEWINGKEYS** locking-mode

locking-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Unlocks the viewing keys
1	yes	Locks the viewing keys

Defaults: Factory = 0 (no)
Omitted = 0 (no)

MACRO STATUS

Displays a macro definition.

Setup: **MACROSTATUS** macro-number

macro-number: integer; specifies which macro definition you want displayed. Valid range is –150 through 32767 for all terminals, plus –230 through –179 for CX Terminals. Specifying –1 or the keyword *all* displays all macros.
Defaults: Factory = (none)
Omitted = 0

MAP INDEX TO PEN

Assigns a color index to a plotter pen.

Host: **ESCPI** port-identifier
index
pen-ID-number
Setup: **PMAP** port-identifier
index
pen-ID-number

port-identifier: string; specifies which 2PPI port the plotter is attached to. Must be *P0:* or *P1:*.
Defaults: Factory = (none)
Omitted = Error

index: integer; specifies which color index to assign. Valid values are:

–1	All color indices
0 — 255	One color index

Defaults: Factory = 1
Omitted = 0

pen-ID-number: integer; specifies the number of a plotter pen. Valid pen numbers for each plotter are:

Plotter	Pen Numbers
4662	0 and 1
4662 with multiple pens	0 through 8
4663	0, 1, and 2

Defaults: Factory = 1
Omitted = 0

Example: Host **ESCPI3P0:52**
Setup **PMAP P0:,5,2**

MAP INDEX TO PRINT

Specifies which graphics color indices print and which do not print when sent to a monochrome printer. (Can be saved in nonvolatile memory.)

Host: ^cQI monochrome-values
Setup: **HCMAP** monochrome-values

monochrome-values: integer array; each pair of integers specifies an index number (–1 through 15, –1 specifies all indices) and a print value (0 means no print, 1 means print).
Defaults: Factory = All indices print except Index 0
Omitted = Error

This command does not affect dialog area indices. If you don't want to print the dialog area, make it invisible.

Example: Host ^cQI42040
Setup **HCMAP 2,0,4,0**

MOVE

Moves the graphics position without drawing a vector.

Host: ^cLF position
Setup: **MOVE** position

position: xy-coordinate; specifies the new graphics position. Valid range is 0 through 4095 for both the x- and y-coordinates.
Defaults: Factory = (none)
Omitted = 0,0

Example: Host ^cLF 'az^PM
Setup **MOVE 53,1000**

PAGE

Erases the graphics area.

Host: $^{E}C^{F}F$

This command has the same effect as pressing the terminal's G Eras key.

If the dialog area is enabled, the terminal erases the graphics area and renews the current view (see the RENEW VIEW command).

If the dialog area is not enabled, the terminal does the following:

- Erases the graphics area
- Renews the current view
- Resets the current line style to 0 (solid lines)
- Terminates 4010 GIN (if it was enabled)
- Sets the current graphics position to home
- Enters Alpha mode

PIXEL COPY

Copies pixels from one rectangular region to another.

Host: ^{E}C**RX** destination-surface
destination-lower-left-corner
first-source-corner
second-source-corner

Setup: **PXCOPY** destination-surface
destination-lower-left-corner
first-source-corner
second-source-corner

destination-surface: integer; names the surface to which pixels are to be copied. Valid values are:

−1	The super surface (all bit planes of all surfaces)
0	The current surface
1 — 4	A particular surface

Defaults: Factory = (none)
Omitted = 0

destination-lower-left-corner: xy-coordinate; specifies the lower-left corner of a rectangular region on the destination surface. Valid range is 0 through 639 for x, and 0 through 511 for y.

Defaults: Factory = (none)
Omitted = 0,0

first-source-corner: xy-coordinate; specifies any corner of a rectangular region on the current pixel surface. Valid range is 0 through 639 for x, and 0 through 511 for y.

Defaults: Factory = (none)
Omitted = 0,0

second-source-corner: xy-coordinate; specifies the corner opposite the *first-source-corner*. Valid range is 0 through 639 for x, and 0 through 511 for y.

Defaults: Factory = (none)
Omitted = 0,0

Example: Host **ESCRX1"pk"K!pb!B!zt!T**
Setup **PXCOPY 1,300,300,200,200,210,210**

PLOT

Sends all visible segments from the current view to the host port or to a 2PPI port.

Host: **ESCPL** separator
destination-device
Setup: **PLOT** separator
destination-device

separator: string; separates the source and destination parameters. It may be omitted in Setup syntax or be an empty string in host syntax. If included, must be the string *TO* (in uppercase or lowercase).

Defaults: Factory = (none)
Omitted = Error

destination-device: string; specifies where the data is to be sent. Must be one of the following:

HO: The host port
P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

Example: Host **ESCPL2TO3P0:**
Setup **PLOT TO,P0:**

PORT ASSIGN

Assigns a protocol for the device attached to one of the 2PPI ports. (Can be saved in nonvolatile memory.)

Host: **EcPA** port-identifier
protocol-identifier
Setup: **PASSIGN** port-identifier
protocol-identifier

port-identifier: string; identifies the port for which you're assigning a protocol. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

protocol-identifier: string; assigns a device protocol to the specified port. Valid entries are:

PPORT	General purpose RS-232 protocol
4510	Protocol for a 4510 Rasterizer
4662	Protocol for a 4662 Plotter
4662/MP	Protocol for a 4662 Plotter equipped with multiple pens
4663	Protocol for a 4663 Plotter

Defaults: Factory = PPORT
Omitted = Error

You don't need to issue a PORT ASSIGN command for the 4957 Graphics Tablet.

Example: Host **EcPA3P1:44510**
Setup **PASSIGN P1:,4510**

PORT COPY

Establishes two-way communications between the host and a 2PPI port or between two 2PPI ports.

Host: **EcPC** source-device
separator
destination-device
Setup: **PCOPY** source-device
separator
destination-device

source-device: string; specifies the first of two peripheral devices between which data will be exchanged. Must be one of the following:

HO: The host port
P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

separator: string; separates the source and destination parameters. It may be omitted in Setup syntax or be an empty string in host syntax. If included, must be the string *TO* (in uppercase or lowercase).

Defaults: Factory = (none)
Omitted = Error

destination-device: string; specifies the second of two peripheral devices between which data will be exchanged. Must be one of the following:

HO: The host port
P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

With this command, you must use the *PPORT* (general purpose) protocol for the 2PPI ports.

Either device can terminate the data transfer by sending its EOF string; the terminal then breaks the data path by sending the appropriate EOF string to each device.

All other terminal activity is suspended until the EOF string is detected, or the Cancel key is pressed.

Example: Host **^{E}cPC3P1:2TO3HO:**
Setup **PCOPY P1:,TO,HO:**

PROMPT MODE

Turns Prompt mode on or off.

Host: **^{E}cNM** prompt-mode
Setup: **PROMPTMODE** prompt-mode

prompt-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Cancels Prompt mode
1	yes	Initiates Prompt mode after the next EOM character or EOL string
2	(none)	Initiates Prompt mode immediately (host syntax only)

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

On CX Terminals, Prompt mode does not affect data passing over the coax cable. However, you can issue this command while the terminal is in HOSTPORT COAX, in which case the terminal will be in Prompt mode as soon as you enter HOSTPORT RS-232.

RASTER WRITE

Specifies a color index for each pixel of a specified number of pixels.

Host: **EcRP** number-of-pixels
color-index-codes

Setup: **PXRASTERWRITE** number-of-pixels
color-index-codes

number-of-pixels: integer; specifies how many pixels are to receive a color index. Valid range is 0 through 65535.
Defaults: Factory = (none)
Omitted = Error

color-index-codes: string (delimited string in Setup); specifies, in a packed format, the color indices for the pixels specified by *number-of-pixels*. Each code is an ASCII character in the range SP through ' (ADE 32 through 96).
Defaults: Factory = (none)
Omitted = 0

This command sets the color for each pixel in a string of pixels, starting at the current pixel beam position in the pixel viewport.

You must use a bit packing scheme to encode this command. The Programmers Reference Manual (Section 4) contains an algorithm for bit packing a RASTER WRITE command.

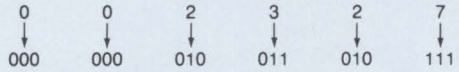
Figure 3 shows how two color indices are packed into each character of the *color-index-codes* parameter when the number of *bits-per-pixel* is 3 in the BEGIN PIXEL OPERATIONS command.

If *bits-per-pixel* in the BEGIN PIXEL OPERATIONS command is 4, one-and-a-half color indices fit into each code character. That is, every pair of codes holds three color indices as shown in Figure 4.

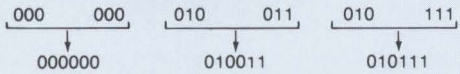
Example: Host **EcRP89222333222**
Setup **PXRASTERWRITE 9,/222333222/**

If *bits-per-pixel* is 3, then pack the color indices 0, 0, 2, 3, 2, 7 into a RASTER WRITE command as follows:

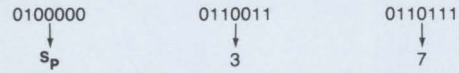
Express the color indices as three-bit binary numerals:



Group the binary bits into six-bit groups:



Add 32 (binary 100000) to these six-bit binary numerals to form seven-bit ASCII characters:



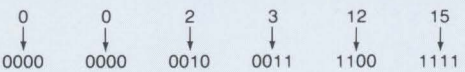
Issue a RASTER WRITE command. The command's first parameter is the integer 6, because the command holds six color indices. The second parameter is a character array holding the characters ^{S}P, **3**, and **7**.

RASTER WRITE = ^{E}c**RP 6 3**^{S}P**37**

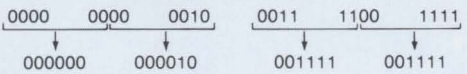
Figure 3. Packing Color Index Codes Using Three Bits per Pixel.

If *bits-per-pixel* is 4, then pack the color indices 0, 0, 2, 3, 12, 15 into a RASTER WRITE command as follows:

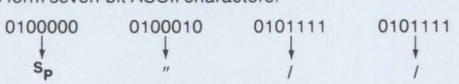
Express the color indices as four-bit binary numerals:



Group the binary bits into six-bit groups:



Add 32 (binary 100000) to these six-bit binary numerals to form seven-bit ASCII characters:



Issue a RASTER WRITE command. The command's first parameter is the integer 6, because the command holds six color indices. The second parameter is a character array holding the characters ^{S}P, ", /, and /.

RASTER WRITE = ^{E}c**RP 6 4**^{S}P**" //**

Figure 4. Packing Color Index Codes Using Four Bits per Pixel.

RECTANGLE FILL

Fills a rectangle with a color by setting all the pixels in the rectangle to the specified index.

Host: **ESC RR** lower-left-corner
upper-right-corner
fill-index

Setup: **PXRECTANGLE** lower-left-corner
upper-right-corner
fill-index

lower-left-corner: xy-coordinate; specifies one corner of a rectangle in raster memory space. Valid range is 0 through 639 for x, and 0 through 511 for y.
Defaults: Factory = (none)
Omitted = 0,0

upper-right-corner: xy-coordinate; specifies the opposite corner of the rectangle. Valid range is 0 through 639 for x, and 0 through 511 for y.
Defaults: Factory = (none)
Omitted = 0,0

fill-index: integer; specifies the color index used to fill the rectangle. Valid range is 0 through 65535.
Defaults: Factory = (none)
Omitted = 0

The terminal writes color indices into raster memory using the ALU mode and surface specified in the BEGIN PIXEL OPERATIONS command.

Example: Host **ESC RRSPpySPY"DTy#W3**
Setup **PXRECTANGLE 100,100,479,300,3**

RENAME SEGMENT

Assigns a new number to an existing segment.

Host: **EcSR** old-segment-number
new-segment-number
Setup: **SGRENAME** old-segment-number
new-segment-number

old-segment-number: integer; specifies the number of the segment being renamed. Valid range is 1 through 32767.
Defaults: Factory = (none)
Omitted = Error

new-segment-number: integer; specifies the new number for the segment. Valid range is 1 through 32767.
Defaults: Factory = (none)
Omitted = Error

Example: Host **EcSRA0B7**
Setup **SGRENAME 16,39**

RENEW VIEW

Erases a view and redraws all visible segments in that view, including the border and the framing box, if applicable.

Host: **EcKN** view-number
Setup: **RENEW** view-number

view-number: integer; specifies the number of the view to be renewed. Valid values are:

–1	All views
0	The current view
1 — 64	A specific view

Defaults: Factory = (none)
Omitted = 0 (current view)

Example: Host **EcKNB0**
Setup **RENEW 32**

REPLACE PART OF SEGMENT

Deletes Pick groups from an existing segment and leaves the segment open.

Host: **EcUE** segment-number
first-Pick-ID
last-Pick-ID

Setup: **SGREPLACE** segment-number
first-Pick-ID
last-Pick-ID

segment-number: integer; specifies the segment in which the Pick group (or groups) will be replaced. Valid range is 1 through 32767.

Defaults: Factory = (none)
Omitted = Error

first-Pick-ID: integer; specifies the ID of the first Pick group to replace. Must be one of the following:

–1	The segment end
1 — 32767	A specific Pick group

Defaults: Factory = (none)
Omitted = Error

last-Pick-ID: integer; specifies the ID of the last Pick group to replace. Must be one of the following:

–1	The segment end
1 — 32767	A specific Pick group

Defaults: Factory = (none)
Omitted = Error

This command deletes the part of a segment between two Pick groups specified as *first-Pick-ID* and *last-Pick-ID* and reopens the segment so you can insert graphics primitives and primitive attributes. If the Pick ID you specify occurs more than once in a segment, the terminal selects the first occurrence of that Pick ID. If you specify a Pick ID that does not exist, the terminal detects an error.

To replace just one Pick group, use its Pick ID as both the *first-Pick-ID and last-Pick-ID* command.

You cannot replace a Pick group that contains an END PANEL command unless the corresponding BEGIN PANEL command is also being replaced.

Also, you cannot delete a range of Pick groups that contains just part of an included copy of a segment.

Example: Host **EcUE377**
Setup **SGREPLACE 3,7,7**

REPORT DEVICE STATUS

Sends a Device Status Report to the host.

Host: ^{E}cJQ device-specifier

device-specifier: string; specifies the port that has the device attached. Valid entries are:

HC: The COPIER port
P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

See *Reports* at the end of these commands for information about Device Status Reports.

REPORT ERRORS

Sends an Error Report to the host.

Host: ^{E}cKQ

See *Reports* at the end of these commands for information about Error Reports.

REPORT GIN POINT

Sends a Locate, Pick, or Stroke Report to the host.

Host: ^{E}cIP device-function-code

device-function-code: integer; identifies a GIN device and function combination. Valid values are -2 and the values listed in Table 13. (-2 generates a Locate Report that gives the graphics position.)

Defaults: Factory = (none)
Omitted = Error

See *Reports* at the end of these commands for information about GIN reports.

Table 13
DEVICE-FUNCTION CODES

Device[a]	Function		
	Locate	Pick	Stroke
Joydisk	0	1	Not valid
Tablet PORT 0 (Absolute)	8	9	10
Tablet PORT 1 (Absolute)	16	17	18
Tablet PORT 0 (Relative)	48	49	Not valid
Tablet PORT 1 (Relative)	56	57	Not valid

[a] Only one device may be enabled on a given port at any time.

REPORT PORT STATUS

Sends a Port Status Report to the host.

Host: ^{E}c**PQ** port

port: string; specifies which 2PPI port's status is to be reported. Valid entries are:

P0:	PORT P0
P1:	PORT P1

Defaults: Factory = (none)
Omitted = Error

See *Reports* at the end of these commands for information about Port Status Reports.

REPORT SEGMENT STATUS

Sends a Segment Status Report to the host.

Host: ^{E}c**SQ** segment-number
status-codes

segment-number: integer; specifies the number of the segment you want information about. Valid values are:

–5	All segments called in subsequent CALL SEGMENT commands
–3	All segments that match the current matching class
–2	The default values for segments not yet defined
–1	All segments in the range 1 through 32767
0	The crosshair cursor
1 — 32767	A specific segment

Defaults: Factory = (none)
Omitted = 0

status-codes: string; specifies which kinds of information you want in the report. Valid entries are:

A	Segment classes
D	Detectability
H	Highlighting mode
I	Image transform parameters
M	Writing mode
P	Pivot point
S	Display priority number
V	Visibility
X	Position

Defaults: Factory = (none)
Omitted = Empty string

You can display segment status information on the screen by entering the Setup command *STATUS segment*.

See *Reports* at the end of these commands for information about Segment Status Reports.

REPORT SYNTAX MODE

Reports the current host command mode (Ansi, Edit, Tek, VT52) to the host in a Terminal Settings Report.

Host: **EcC#!0**

This command has the same effect as a REPORT TERMINAL SETTINGS command issued for the SELECT CODE command (as if the host sent *EcIQ%!*. See the REPORT TERMINAL SETTINGS command.

This command is recognized in all host command modes.

You can display the host command mode status on the screen by entering the Setup command *STATUS CODE*.

REPORT TERMINAL SETTINGS

Sends a Terminal Settings Report to the host.

Host: **EcIQ** inquiry-code

inquiry-code: two characters; specifies the two-letter opcode for an escape-sequence command or a special two-character inquiry code for other information about the terminal.
Defaults: Factory = (none)
Omitted = Error

Besides the opcodes for commands, you can also use the following special inquiry codes:

?M	Reports total general-purpose memory available and the largest contiguous block of program memory
?P[1]	Reports additional memory for building segments (available with Option 21) and the largest contiguous block of additional memory
?T	Reports the terminal model number
00	Reports the firmware version installed in the terminal
99	Reports the level number of the firmware version installed in the terminal

Example: Host **EcIQLL**

[1] If you don't have Option 21, the terminal reports *0 0* in response to this special inquiry code.

REPORT 4010 STATUS

Sends a 4010 Status Report to the host, terminates 4010 GIN, and puts the terminal in Alpha mode.

Host: $^{E}C^{E}Q$

See *Reports* at the end of these commands for information about 4010 Status Reports.

RESET

Returns the terminal to its power-up condition.

Host: ^{E}C**KV**
Setup: **RESET**

Be careful when issuing this command since, if any of the terminal's current settings for communications parameters differ from settings saved in nonvolatile memory, the RESET command may disrupt host/terminal communications.

The *power-up condition* is a combination of the terminal's factory default values and the settings you save in nonvolatile memory.

This command is equivalent to pressing the terminal's RESET button or turning the terminal off and then on again.

On CX Terminals, when the terminal receives a RESET command while in HOSTPORT COAX, it initializes to its power-up condition and signals the controller that, in effect, the terminal has been turned off and on.

RUNLENGTH WRITE

Writes color indices into raster memory using the ALU mode and surface specified in the BEGIN PIXEL OPERATIONS command.

Host: ^{E}C**RL** runcode-array
Setup: **PXRUNLENGTHWRITE** runcode-array

runcode-array: integer array; assigns color indices to a specified number of pixels in the pixel viewport starting at the current pixel beam position. Valid range for each runcode in the array is 0 through 65535.
Defaults: Factory = (none)
Omitted = Empty array

Each runcode includes two numbers packed together; one is a color index, and the other is the number of pixels that are to be set to that color index. The runcodes are packed using the form:

Runcode = number-of-pixels $* 2^n$ + color-index
where n = bits-per-pixel

Example: Host ^{E}C**RL1E4**
Setup **PXRUNLENGTHWRITE 84**

SAVE

Sends a segment definition to the host port or to one of the 2PPI ports.

Host: ^cJV object-saved
segment-number
separator
destination-device

Setup: **SAVE** object-saved
segment-number
separator
destination-device

object-saved: string; specifies the object to be saved. Must be the string *SEG*, since segment definitions are the only object that can be saved. (This parameter is included for compatibility with other Tektronix terminals.)

Defaults: Factory = (none)
Omitted = Error

segment-number: integer; specifies the segment to be saved. Must be one of the following:

-4	All segments in the current view
-3	All segments that match the current matching class
-1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

separator: string; separates the *item-count* and *destination-device* parameters. It may be omitted in Setup syntax or be an empty string in host syntax. If included, must be the string *TO* (in uppercase or lowercase).

Defaults: Factory = (none)
Omitted = Error

destination-device: string; specifies the device to which the segment definition will be sent. Must be one of the following:

HO:	The host port
P0:	PORT 0
P1:	PORT 1

Defaults: Factory = (none)
Omitted = Error

Example: Host **^cJV3SEG!2TO3HO:**
Setup **SAVE SEG,-1,TO,HO:**

SAVE NONVOLATILE PARAMETERS

Saves the values of those commands whose settings can be saved in nonvolatile memory; also saves all nonvolatile macros.

Host: ESC**KU**
Setup: **NVSAVE**

This command saves only those settings that have changed since the last time this command was issued. These settings become part of the terminal's power-up condition. The only macros that it saves are those defined with the DEFINE NONVOLATILE MACRO and LEARN NONVOLATILE commands.

SELECT CODE

Puts the terminal in ANSI, TEK, VT52, or EDIT mode. (Can be saved in nonvolatile memory.)

Host: ESC**%!** syntax
Setup: **CODE** syntax

syntax: integer; (keyword in Setup). Valid entries are:

Host	Setup	
0	TEK	TEK mode syntax
1	ANSI	ANSI mode syntax
2	EDIT	ANSI mode syntax for EDIT mode
3	VT52	VT52 mode syntax

Defaults: Factory = 0 (TEK mode)
Omitted = 0 (TEK mode)

SELECT COLOR HARDCOPY IMAGE DENSITY

Determines whether copies are made with low or high density (number of dots per inch). (Can be saved in nonvolatile memory.)

Host: ESC**QU** density-code
Setup: **HCDENSITY** density-code

density-code: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	low	Low density
1	high	High density

Defaults: Factory = 1 (high)
Omitted = 1 (high)

This command affects copies made on the Tektronix 4692 Color Graphics Copier. Low density is 128 dots-per-inch; high density is 154 dots-per-inch.

SELECT FILL PATTERN

Specifies the fill pattern for subsequent panels.

Host: ^EcMP fill-pattern-number
Setup: **FILLPATTERN** fill-pattern-number

fill-pattern-number: integer; specifies a panel's fill pattern. Valid values are:

–15 — 0	Specifies a solid color
1 — 16	Specifies a predefined pattern
50 — 174	Specifies a predefined dither pattern

Defaults: Factory = –1
Omitted = 0

Predefined fill patterns and their associated numbers are shown at the end of this reference guide.

Example: Host ^EcMPA0
Setup **FILLPATTERN 16**

SELECT HARDCOPY INTERFACE

Identifies the type of copier connected to the COPIER port. (Can be saved in nonvolatile memory.)

Host: ^EcQD copier-type
Setup: **HCINTERFACE** copier-type

copier-type: integer; identifies the type of copier connected to the COPIER port. Must be one of the following:

0	A Centronics-type monochrome text printer
1 or 2	A Tektronix 4691, 4692, or 4695 Color Graphics Copier
3	A Tektronix 4644 Dot Matrix Printer or other printer with Epson FX-80 graphics protocol
4	A Hewlett-Packard ThinkJet Printer

Defaults: Factory = 2
Omitted = 0

This command does not affect the COPY command, which requires that your application structure the data for the copier.

If you specify *copier-type 0* (monochrome text printer), you can only make dialog area copies — pressing the S Copy key or issuing the HARDCOPY command to request a screen copy generates an error.

Example: Host ^EcQD2
Setup **HCINTERFACE 2**

SELECT VIEW

Specifies which view will be the current view.

Host: ^cRC view-number
Setup: **VSELECT** view-number

view-number: integer; specifies the view to be selected. Valid values are:

-1	The next lower-numbered view
0	The next higher-numbered view
1 — 64	A specific view

Defaults: Factory = 1
Omitted = 0

The default view that is created at power-up (or when a DELETE VIEW command with -1 is issued) has these attributes:

View number:	1
Window:	x = 0 — 4095
	y = 0 — 3130
Viewport:	x = 4095
	y = 3071
Surface number:	1
Border:	Invisible
Graphics position:	0,3071
Wipe index:	0

On CX Terminals, when in HOSTPORT COAX, the viewport is set to 0,0 and 4095,3045 at power-up, and is restricted to a maximum of 3045 in the y direction.

Example: Host ^cRCC0
Setup **VSELECT 48**

SET ALPHA CURSOR INDICES

Assigns color indices to the alpha cursor. (Can be saved in nonvolatile memory.)

Host: **EcTD** first-index
second-index

Setup: **ACURSOR** first-index
second-index

first-index: integer; specifies the first color for the alpha cursor; Valid range is 0 through 65535 (values greater than 7 default to 7).

Defaults: Factory = 1
Omitted = 0

second-index: integer; specifies the second color for the alpha cursor; Valid range is 0 through 65535 (values greater than 7 default to 7).

Defaults: Factory = 0
Omitted = 0

If *second-index* is a different color than *first-index,* the cursor blinks between the two colors. If the two indices are the same, the cursor does not blink.

The alpha cursor indices refer to dialog area indices when the dialog area is enabled, and to graphics area indices when the dialog area is disabled.

On CX Terminals this command can be executed while in HOSTPORT COAX but the alpha cursor won't change until the terminal enters HOSTPORT RS-232.

Example: Host **EcTD36**
Setup **ACURSOR 3,6**

SET ALPHATEXT FONT

Selects the font to be used for alphatext.

Host: ^{E}C font-code

font-code: character; selects the G0 or G1 character set. Valid entries are:

^{S}I The G0 character set
^{S}O The G1 character set

Defaults: Factory = G0 character set

The G0 and G1 character sets can be selected with the ANSI command SCS (Select Character Set).

This command has no effect on the character set displayed in Setup. Setup always displays the keyboard's default character set, regardless of the current setting made by SET ALPHATEXT FONT.

SET ANSWERBACK STRING

Assigns the terminal's answerback string. (Can be saved in nonvolatile memory.)

Setup: **ANSWERBACK** answerback-string

answerback-string: delimited string; specifies an answerback string of up to twenty characters.

Defaults: Factory = Empty string
Omitted = Empty string

The string you set with this command is not saved in nonvolatile memory until you issue the SAVE NONVOLATILE PARAMETERS command.

Example: Setup **ANSWERBACK /PASSKEY/ NVSAVE**

SET BACKGROUND COLOR

Sets the color of the background surface.

Host: **EcTB** first-color-coordinate
second-color-coordinate
third-color-coordinate

Setup: **CBACKGROUND** first-color-coordinate
second-color-coordinate
third-color-coordinate

first-color-coordinate: integer; specifies the first color coordinate of the coordinate system specified by the SET COLOR MODE command. The valid range for each color coordinate system is:

For HLS: H = -32768 — 32767
For RGB: R = 0 — 100
For CMY: C = 0 — 100

Defaults: Factory = 0
Omitted = 0

second-color-coordinate integer; specifies the second color coordinate of the coordinate system specified by the SET COLOR MODE command. The valid range for each color coordinate system is:

For HLS: L = 0 — 100
For RGB: G = 0 — 100
For CMY: M = 0 — 100

Defaults: Factory = 0
Omitted = 0

third-color-coordinate integer; specifies the third color coordinate of the coordinate system specified by the SET COLOR MODE command. The valid range for each color coordinate system is:

For HLS: S = 0 — 100, or 1000 — 1100
For RGB: B = 0 — 100, or 1000 — 1100
For CMY: Y = 0 — 100, or 1000 — 1100

Defaults: Factory = 0
Omitted = 0

The background color can also be set with the SET SURFACE COLOR MAP command. You can specify a blinking color by adding 1000 to the value of the *third-color-coordinate* parameter.

If you specify a subtractive overlay mode in the SET COLOR MODE command, then you should also specify a white background color (or some other light color) with the SET BACKGROUND COLOR command.

Example: Host **EcTBG8C2F4**
Setup **CBACKGROUND 120,50,100**

SET BACKGROUND INDICES

Specifies color indices for the character backgrounds (character cells) of string-precision graphtext and alphatext in the graphics area; also specifies the color index used for gaps in dashed lines.

Host: **EcMB** text-background-index
dash-gap-index

Setup: **BACKINDEX** text-background-index
dash-gap-index

text-background-index: integer; specifies a background index. Valid values are:

-2	Assigns the same index as the viewport wipe index
-1	Leaves the character background unchanged
0 — 15	Assigns a specific index

Defaults: Factory = -1
Omitted = 0

dash-gap-index: integer; determines the color index for the gaps in dashed lines. Valid values are:

-2	Specifies the wipe index for the current viewport
-1	Leaves the line-gap pixels unchanged
0 — 15	Specifies a specific index

Defaults: Factory = -1
Omitted = 0

SET BACKGROUND INDICES and SET GRAPHICS AREA WRITING MODE both affect how alphatext is displayed in the graphics area, so each of these commands supersedes the effect of the other.

Specifying -2 for *text-background-index* has the same effect as selecting Replace mode in the SET GRAPHICS AREA WRITING MODE command. Specifying -1 for *text-background-index* has the same effect as selecting Overstrike mode in the SET GRAPHICS AREA WRITING MODE command.

Example: Host **EcMB0!**
Setup **BACKINDEX 0,-1**

SET BAUD RATES

Sets the terminal's transmit and receive baud rates. (Can be saved in nonvolatile memory.)

Host: **EcNR** transmit-data-rate
receive-data-rate
Setup: **BAUDRATE** transmit-data-rate
receive-data-rate

transmit-data-rate: integer; specifies the baud rate at which the terminal sends data to the host. Valid values are 1 (which means *external clock*), 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200, and 38400.
Defaults: Factory = 2400
Omitted = Error

receive-data-rate: integer; specifies the baud rate at which the terminal expects to receive data from the host. Valid values are the same as for *transmit-data-rate,* with the addition of 0, which means *same as the transmit rate.*
Defaults: Factory = 2400
Omitted = Same as *transmit-data-rate*

The transmit and receive parameters need not be the same, unless you set the baud rate to 38400.

On CX Terminals, this command affects only HOSTPORT RS-232. However, you can issue SET BAUD RATES while the terminal is in HOSTPORT COAX.

Example: Host **EcNRe8R<**
Setup **BAUDRATE 600,300**

SET BORDER VISIBILITY

Controls the visibility of the border drawn around the current view's viewport.

Host: **EcRE** border-visibility-mode
Setup: **BORDER** border-visibility-mode

border-visibility-mode: integer. Valid entries are:

Host	Setup	
0	no	Invisible
1	yes	Visible
2	toggle	Switches between visible and invisible

Defaults: Factory = 0 (no)
Omitted = 0 (no)

This command operates the same as the BORDER viewing key (part of the terminal's Zoom and Pan feature).

SET BREAK TIME

Sets the duration (in milliseconds) of the break signal the terminal sends when the terminal's Break key is pressed. (Can be saved in nonvolatile memory.)

Host: ^{E}cNK break-time
Setup: **BREAKTIME** break-time

break-time: integer; specifies the length of the break signal (in milliseconds). Valid range is 0 through 65535; a value of 0 disables the break signal.
Defaults: Factory = 200
Omitted = 0

On CX Terminals, this command affects only HOSTPORT RS-232. However, you can issue SET BREAK TIME while the terminal is in HOSTPORT COAX.

Example: Host ^{E}cNKA9
Setup **BREAKTIME 25**

SET BYPASS CANCEL CHARACTER

Specifies the character that cancels Bypass mode. (Can be saved in nonvolatile memory.)

Host: ^{E}cNU bypass-cancel-character
Setup: **BYPASSCANCEL** bypass-cancel-character

bypass-cancel-character: integer (small integer in Setup); specifies the ADE of the character that cancels Bypass mode; Valid range is 0 through 127.
Defaults: Factory = 10 (^{L}F)
Omitted = 0 (^{N}U)

If your host echos, set the bypass cancel character to the last character sent by the host when it echoes a line of text to the terminal.

If your host doesn't echo, you probably don't need Bypass mode, so set the *bypass-cancel-character* to ^{N}U (ADE 0) to keep the terminal from entering Bypass mode.

On CX Terminals while in HOSTPORT COAX, the bypass cancel character has no effect on the terminal.

Example: Host ^{E}cNU:
Setup **BYPASSCANCEL 10**

SET COLOR COPIER DATA RESOLUTION

Determines how precisely the terminal sends color data for each of three colors (red, green, and blue) to a Tektronix 4692 Color Graphics Copier. (Can be saved in nonvolatile memory.)

Host: ^EcQB number-of-bytes
Setup: **HCDATARES** number-of-bytes

number-of-bytes: integer; specifies how many bytes the terminal uses to transmit color data to a color copier. Valid values are 1 and 2.
Defaults: Factory = 2
Omitted = Error

One-byte color resolution uses two bits of color information for each of the three colors, permitting the 4692 to print 64 distinct colors.

Two-byte color resolution uses four bits of color information for each color, permitting the 4692 to print 216 distinct colors. The copy color is a more precise copy of the color displayed on the terminal screen.

Example: Host ^EcQB2
Setup **HCDATARES 2**

SET COLOR COPIER REPAINT

Specifies the number of times the terminal transmits an image to the Tektronix 4692 Color Graphics Copier in the course of makng a single copy. (Can be saved in nonvolatile memory.)

Host: ^EcQT repaint-count
Setup: **HCREPAINT** repaint-count

repaint-count: integer; specifies the number of times the image is transferred to the copier. The valid range is 0 through 4 (0 defaults to 1).
Defaults: Factory = 1
Omitted = 1

This command is useful in preparing transparencies because it results in brighter colors. However, the time required to make a copy is multiplied by the number of image passes.

Example: Host ^EcQT4
Setup **HCREPAINT 4**

SET COLOR MODE

Specifies (1) which color coordinate system (HLS, RGB, or CMY) you want to use for specifying color, and (2) how colors mix on overlapping areas of surfaces.

Host: **ESC TM** color-specifying-mode
color-overlay-mode
gray-mode

Setup: **CMODE** color-specifying-mode
color-overlay-mode
gray-mode

color-specifying-mode: integer; specifies the color coordinate system used to mix colors in subsequent color operations. Valid values are:

0 No change from current setting
1 RGB (red, green, blue)
2 CMY (cyan, magenta, yellow)
3 HLS (hue, lightness, saturation)

Defaults: Factory = 3 (HLS)
Omitted = 0 (no change)

color-overlay-mode: integer; specifies the mode used when colors are placed on top of each other. Valid values are:

0 No change from current setting
1 Opaque
2 Subtractive
3 Additive

Defaults: Factory = 1 (opaque)
Omitted = 0 (no change)

gray-mode: integer; Valid values are 0 and 1. In Tektronix 4100 and CX4100 Series Terminals, 0 and 1 both specify color operation; in Tektronix 4110 Series Terminals, 0 specifies black-and-white.

Defaults: Factory = 1 (color)
Omitted = 0 (no change)

Example: Host **ESC TM131**
Setup **CMODE 1,3,1**

SET COPY SIZE

Selects a standard or reduced image on the Tektronix 4695 Color Graphics Copier. (Can be saved in nonvolatile memory.)

Host: ^[c**QA** size
Setup: **HCSIZE** size

size: integer; selects the size of the image for the copy. Valid values are:

0 Selects default size (8½x11″)
1 Selects smaller, reduced size

Defaults: Factory = 0
Omitted = 0

The smaller size screen copy is one-half the default size. The smaller size dialog area copy is smaller than the default size but larger than one-half the default size.

Specifying the smaller size produces a faster copy, but only in eight colors. The small copy size also allows you to copy 132 columns on the same line.

If you are using a monochrome copier, you cannot change the copy size.

Example: Host ^[c**QA1**
Setup **HCSIZE 1**

SET CURRENT MATCHING CLASS

Establishes the inclusion and exclusion sets used in matching operations.

Host: ^[c**SL** inclusion-set
exclusion-set
Setup: **SGMATCHINGCLASS** inclusion-set
exclusion-set

inclusion-set: integer array; specifies the set of classes used in the inclusion part of a matching operation. Valid values for integers in the array are:

-1 All classes
1 — 64 A specific class

Defaults: Factory = Empty array
Omitted = Empty array

exclusion-set: integer array; specifies the set of classes used in the exclusion part of a matching operation. Valid values for integers in the array are:

-1 All classes
1 — 64 A specific class

Defaults: Factory = Empty array
Omitted = Empty array

Example: Host ^[c**SL2 = >3345**
Setup **SGMATCHINGCLASS <13,14>,<3,4,5>**

SET CURVE SMOOTHNESS

Determines the smoothness of curves drawn with the DRAW CURVE command.

Host: ^cUG smoothness
Setup: **CSMOOTH** smoothness

smoothness: real; specifies the accuracy with which the terminal approximates an arc. Valid range is 0.0 through 1.0.
Defaults: Factory = 0.0909 . . .
Omitted = 0.0

The *smoothness* parameter determines how many vectors the terminal uses (and thus how smooth the curve appears) when you issue a DRAW CURVE command to draw an arc.

When you draw an arc in a segment definition, a smooth arc takes more segment memory than a rough one.

The terminal approximates an arc by drawing a number of vectors. A smoothness of *0* results in 1° per vector, or 360 vectors in a full circle. A smoothness of *1* results in 45° per vector, or eight vectors per circle. The default smoothness is *0.0909* . . ., which corresponds to 5° per vector, or 72 vectors per circle.

You can calculate the smoothness with the following formula:

smoothness = (degrees per vector − 1)/44

Example: Host ^cUG10
Setup **CSMOOTH 1,0**

SET DIALOG AREA BUFFER SIZE

Specifies the number of lines available for storing text in the dialog area buffer. (Can be saved in nonvolatile memory.)

Host: ^{E}c**LB** number-of-lines
Setup: **DABUFFER** number-of-lines

number-of-lines: integer. Valid range is 2 though 32767.
Defaults: Factory = 49 (32 in HOSTPORT COAX)
Omitted = Error

Remember that the 4106 and CX4106 memory is limited, so keep the dialog area buffer as small as possible to allow space for other features.

If you make the dialog area buffer smaller than the dialog area, the terminal shrinks the dialog area to match the buffer.

On CX Terminals you can issue this command while the terminal is in HOSTPORT COAX, but you will not see any change to the buffer size until the terminal enters HOSTPORT RS-232. The dialog area buffer is always set to 32 lines when you're in HOSTPORT COAX.

Example: Host ^{E}c**LBA>**
Setup **DABUFFER 30**

SET DIALOG AREA COLOR MAP

Specifies the color assigned to one or more color indices in the dialog area. (Can be saved in nonvolatile memory.)

Host: ^{E}c**TF** color-mixtures
Setup: **DACMAP** color-mixtures

color-mixtures: integer array (of quadruples); assigns a color mixture to one or more color indices for the dialog area.
Defaults: Factory = See Table 14
Omitted = No change to color map

The integers in the *color-mixtures* array are in groups of four called quadruples. The first integer in each quadruple specifies a color index; the following three integers specify the color coordinates (HLS, RGB, or CMY) that define the color mixture for that color index. In host syntax, the array count precedes the quadruples and should include each integer of all the quadruples.

Valid ranges for the color mixtures are:

HLS	*RGB and CMY*
-32768 — 32767	0 — 100
0 — 100	0 — 100
0 — 100	0 — 100

The color assigned to Index 0 applies only to alphatext characters. For the dialog area background and character background, Index 0 always means "transparent."

Example: Host ^{E}c**TF830F4020C2F4**
Setup **DACMAP 3,0,100,0,2,0,50,100**

Table 14
FACTORY DEFAULT DIALOG AREA COLOR INDICES

Color Index	Color Mixture	Color Coordinates[a]								
		H	L	S	R	G	B	C	M	Y
0	Black	0	0	0	0	0	0	100	100	100
1	White	0	100	0	100	100	100	0	0	0
2	Red	120	50	100	100	0	0	0	100	100
3	Green	240	50	100	0	100	0	100	0	100
4[b]	Blue	330	60	100	20	60	100	80	40	0
5	Cyan	300	50	100	0	100	100	100	0	0
6	Magenta	60	50	100	100	0	100	0	100	0
7	Yellow	180	50	100	100	100	0	0	0	100

[a] **H = hue, L = lightness, S = saturation**
R = red, G = green, B = blue
C = cyan, M = magenta, Y = yellow

[b] **In firmware versions preceding Version 4, the color coordinates for Index 4 in the dialog area are: HLS 0,50,100; RGB 0,0,100; CMY 100,100,0.**

SET DIALOG AREA HARDCOPY ATTRIBUTES

Specifies the number of pages to be copied, the starting page, and how Form Feed is interpreted. (Can be saved in nonvolatile memory.)

Host: ^cQL number-of-pages
page-origin
^F-interpretation

Setup: **HCDAATTRIBUTES** number-of-pages
page-origin
^F-interpretation

number-of-pages: integer; specifies how many pages to copy. Valid range is 0 through 32767 (0 means no change from the last setting).

Defaults: Factory = 1
Omitted = 0

page-origin: integer; specifies the copy's starting point. Valid values are:

0 First visible line on the screen
1 Top of the dialog buffer
2 Bottom of the dialog buffer

Defaults: Factory = 0
Omitted = 0

^F-interpretation: integer; specifies how the terminal interprets ^F (Form Feed) in the dialog buffer. Valid values are:

0 Ignores ^F and divides the buffer into 66-line pages (60 text lines, plus 3 blank lines at both the top and bottom)
1 Starts a new page every 66 lines or when ^F appears in the text
2 Starts a new page only when ^F appears in the text

Defaults: Factory = 0
Omitted = 0

Example: Host ^cQL211
Setup **HCDAATTRIBUTES 2,1,1**

SET DIALOG AREA INDEX

Specifies the color index for alphatext characters, the character-cell background, and the dialog area background.

Host: **EcLI** character-index
character-background-index
dialog-background-index

Setup: **DAINDEX** character-index
character-background-index
dialog-background-index

character-index: integer; specifies the color index of the characters displayed in the dialog area. Valid range is 0 through 65535.

Defaults: Factory = 1
Omitted = 0

character-background-index: integer; specifies the color index used for each character cell background. Valid range is 0 through 65535. Index 0 specifies transparent.

Defaults: Factory = 0
Omitted = 0

dialog-background-index: integer; specifies the color index of the dialog area background. Valid range is 0 through 65535. Index 0 specifies transparent.

Defaults: Factory = 0
Omitted = 0

Indices 0 through 7 represent colors defined by the SET DIALOG AREA COLOR MAP command. When you specify a value greater than 7 for any color index, the terminal uses Index 7.

Example: Host **EcLI345**
Setup **DAINDEX 3,4,5**

SET DIALOG AREA LINES

Specifies the number of lines visible in the dialog area. (Can be saved in nonvolatile memory.)

Host: ^{E}c**LL** number-of-lines
Setup: **DALINES** number-of-lines

number-of-lines: integer; specifies how many lines are in the dialog area. Valid range is 2 through 32.
Defaults: Factory = 32
Omitted = Error

If you make the dialog area larger than the dialog buffer (assuming both are less than 32 lines), the terminal expands the dialog buffer to be as large as the dialog area.

If Column mode is set to 132, the maximum number of lines is 30, instead of 32.

Example: Host ^{E}c**LL?**
Setup **DALINES 15**

SET DIALOG AREA VISIBILITY

Specifies whether or not the dialog area is visible. (Can be saved in nonvolatile memory.)

Host: ^{E}c**LV** visibility-mode
Setup: **DAVISIBILITY** visibility-mode

visibility-mode: integer (keyword in Setup); sets the dialog area to be either visible or invisible. Valid entries are:

Host	Setup	
0	no	Dialog area invisible
1	yes	Dialog area visible

Defaults: Factory = 1 (yes)
Omitted = 1 (yes)

This command serves the same purpose as the Dialog key.

SET DIALOG AREA WRITING MODE

Controls how the terminal displays the Underscore and Space characters sent to the terminal screen. (Can be saved in nonvolatile memory.)

Host: ^{E}c**LM** writing-mode
Setup: **DAMODE** writing-mode

writing-mode: integer (keyword in Setup); selects how the Underscore character works. Valid entries are:

Host	Setup	
0	replace	Replaces characters
1	overstrike	Overwrites characters

Defaults: Factory = 0 (replace)
Omitted = 0 (replace)

If you specify *overstrike*, the terminal treats Space and Underscore in the same way as a printer does — the Underscore character underlines the current character and the Space character just moves the cursor forward without erasing characters. (On the screen, however, the Space character erases underscores.)

If you specify *replace* (which is the terminal's factory default), the Space and Underscore characters overwrite other characters[1], as they normally do.

SET ECHO

Specifies whether the terminal echoes characters it transmits to the host. (Can be saved in nonvolatile memory.)

Host: ^{E}c**KE** echo-mode
Setup: **ECHO** echo-mode

echo-mode: integer (keyword in Setup); specifies whether the terminal provides a local echo. Valid entries are:

Host	Setup	
0	no	Remote echo — the terminal does not echo
1	yes	Local echo — the terminal echoes

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

In Setup (and in Local mode) the terminal always provides the echo.

On CX Terminals this command does not affect data passing over the coax cable. Although you can issue this command while the terminal is in HOSTPORT COAX, you won't see the result until you put the terminal in HOSTPORT RS-232 and enter data.

[1] **Unless Insert/Replace mode is set to *insert* (Insert/Replace mode is controlled by the ANSI commands RM and SM).**

SET EDIT CHARACTERS

Specifies the special text-editing characters used in the dialog area while in Setup. (Can be saved in nonvolatile memory.)

Host: **EcKZ** character-delete
line-delete
literal

Setup: **EDITCHARS** character-delete
line-delete
literal

character-delete: integer (small integer in Setup); specifies the key that erases the character to the left of the cursor.
Defaults: Factory = 127 (DT — the Rub Out key)
Omitted = Unchanged

line-delete: integer (small integer in Setup); specifies the key used in Setup to delete the current line.
Defaults: Factory = 24 (CN — the Ctrl-X key combination)
Omitted = Unchanged

literal: integer (small integer in Setup); specifies the character used just before an editing character to suspend its control action and print it as text.
Defaults: Factory = 126 (~)
Omitted = Unchanged

Example: Host **EcKZG?A8G>**
Setup **EDITCHARS** Back Space ,?,#

SET EOF STRING

Specifies the terminal's end-of-file string. (Can be saved in nonvolatile memory.)

Host: **EcNE** EOF-string
Setup: **EOFSTRING** EOF-string

EOF-string: integer array (delimited string in Setup); specifies the ASCII characters in the EOF string. Valid range for each character in the array is ADE 0 through 127.
Defaults: Factory = Empty array
Omitted = Empty array

The EOF string cannot contain more than 10 characters, and should be set to match whatever string your host actually sends at the end of a file.

Example: Host **EcNE3E8E9E:**
Setup **EOFSTRING /XYZ/**

SET EOL STRING

Specifies the terminal's end-of-line string. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**NT** EOL-string
Setup: **EOLSTRING** EOL-string

EOL-string: integer array (delimited string in Setup); specifies the ASCII characters in the EOL string. Valid range for each character in the array is ADE 0 through 127.
Defaults: Factory = 13 ($^{C}_{R}$)
Omitted = Empty array

The end-of-line string usually consists of the single character $^{C}_{R}$ (ADE 13), but it can contain up to two ASCII characters.

Example: Host $^{E}_{C}$**NT1** =
Setup **EOLSTRING** /~$^{C}_{R}$/

SET EOM CHARACTERS

Specifies the characters the terminal uses to control the flow of text to the host. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**NC** first-EOM-character
second-EOM-character
Setup: **EOMCHARS** first-EOM-character
second-EOM-character

first-EOM-character: integer (small integer in Setup); specifies the ADE of the first EOM character. Valid range is 0 through 127.
Defaults: Factory = 13 ($^{C}_{R}$)
Omitted = 0 ($^{N}_{U}$)

second-EOM-character: integer (small integer in Setup); specifies the ADE of the second EOM character. Valid range is 0 through 127.
Defaults: Factory = 10 ($^{L}_{F}$)
Omitted = 0 ($^{N}_{U}$)

If you set both characters to $^{N}_{U}$, the terminal will not use the transmit delay for characters typed from the keyboard. If you want only one EOM character, set *second-EOM-character* to $^{N}_{U}$.

Example: Host $^{E}_{C}$**NC**=:
Setup **EOMCHARS 13,10**

SET ERROR THRESHOLD

Specifies the levels of error messages the terminal displays on the screen.

Host: EcKT error-threshold-level
Setup: **ERRORLEVEL** error-threshold-level

error-threshold-level: integer; specifies the lowest error level displayed. Valid values are:

0 Displays all messages, warnings, errors, and terminal failure messages
1 Displays warnings, errors, and terminal failure messages
2 Displays errors and terminal failure messages
3 Displays terminal failure messages
4 No messages, warnings, errors, or terminal failure messages displayed

Defaults: Factory = 2
Omitted = 0

This command has no effect on which errors are reported to the host.

SET FIXUP LEVEL

Selects the conditions that cause the terminal to update the display when changes are made to the current view.

Host: EcRF fixup-level
Setup: **FIXUP** fixup-level

fixup-level: integer; specifies how frequently the terminal updates the current view. Valid range is 0 through 6.
Defaults: Factory = 6
Omitted = 0

There are four fixup levels — 0, 2, 4, and 6. If you specify any other valid positive integer, it has the same effect as the next lower fixup level. See the Programmers Reference manual for what action each fixup level causes.

SET FLAGGING MODE

Specifies the kind of flagging the terminal uses. (Can be saved in nonvolatile memory.)

Host: ^{E}c**NF** flagging-mode
Setup: **FLAGGING** flagging-mode

flagging-mode: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	none	No flagging
1	input	DC1/DC3 flagging on input from the host
2	output	DC1/DC3 flagging on output to the host
3	in/out	DC1/DC3 flagging on both input from and output to the host
4	DTR/CTS	DTR/CTS flagging

Defaults: Factory = 0 (none)
Omitted = 0 (none)

If the host uses the DC1/DC3 scheme, users can use the Ctrl-S and Ctrl-Q key combinations to stop and start output from the host.

On CX Terminals this command does not affect data passing over the coax cable. However, you can issue this command while the terminal is in HOSTPORT COAX, in which case the flagging selection becomes effective immediately on the RS-232 line.

SET GIN AREA

Defines a GIN area on a graphics tablet and maps the GIN area into terminal space.

Host: ^{E}cIV device-function-code
window-specifier
lower-left-corner
upper-right-corner

Setup: **GINAREA** device-function-code
window-specifier
lower-left-corner
upper-right-corner

device-function-code: integer; identifies the device and function combination affected by the GIN area. Table 15 shows valid device-function codes.

Defaults: Factory = All device-function codes
Omitted = 0

window-specifier: integer; selects the window that the GIN area maps into. Valid values are:

-1 Window defined by SET GIN WINDOW command
0 Window of current view

Defaults: Factory = -1
Omitted = 0

lower-left-corner: xy-coordinate; specifies the lower-left corner of a rectangular region on a graphics tablet. Valid range for x and y is 0 through 4095.

Defaults: Factory = 0,0
Omitted = 0,0

upper-right-corner: xy-coordinate; specifies the upper-right corner of a rectangular region on a graphics tablet. Valid range for x and y is 0 through 4095.

Defaults: Factory = 4095,4095
Omitted = 4095,4095

Example: Host ^{E}cIV80^{S}P py^{S}P Y" ^{D}T y#W
Setup **GINAREA 8,0,100,100,479,359**

Table 15
DEVICE-FUNCTION CODES

Device[a]	Function		
	Locate	Pick	Stroke
Joydisk	0	1	Not valid
Tablet PORT 0 (Absolute)	8	9	10
Tablet PORT 1 (Absolute)	16	17	18
Tablet PORT 0 (Relative)	48	49	Not valid
Tablet PORT 1 (Relative)	56	57	Not valid

[a] Only one device may be enabled on a given port at any time.

SET GIN CURSOR

Selects a segment for use as the GIN cursor.

Host: **EcIC** device-function-code
segment-number
Setup: **GINCURSOR** device-function-code
segment-number

device-function-code: integer; identifies a device and function combination. See Table 15 (under SET GIN AREA) for valid device-function codes.
Defaults: Factory = (none)
Omitted = 0

segment-number: integer; specifies which segment will be used as the GIN cursor. Valid range is 0 through 32767 (Segment 0 is the crosshair cursor).
Defaults: Factory = (none)
Omitted = 0

While a segment is being used as the GIN cursor, it ceases to be detectable in a Pick operation, becomes visible in the current view, and is displayed in XOR mode (as described in the SET SEGMENT WRITING MODE command). Except for the segment position, these attributes are restored when you disable GIN.

Don't use the same segment as the GIN cursor for more than one device-function combination; if you do, the cursor may not move in response to GIN input.

Example: Host **EcIC8?**
Setup **GINCURSOR 8,15**

SET GIN CURSOR COLOR

Specifies the color mixture for the GIN crosshair cursor using the coordinate system (HLS, RGB, or CMY) specified by the SET COLOR MODE command. (Can be saved in nonvolatile memory.)

Host: **EcTC** first-color-coordinate
second-color-coordinate
third-color-coordinate
Setup: **GCURSOR** first-color-coordinate
second-color-coordinate
third-color-coordinate

first-color-coordinate: integer; selects a value for hue, red, or cyan, depending on the color mode selection. See Table 16 for each mode's valid range.
Defaults: Factory = 0
Omitted = 0

second-color-coordinate: integer; selects a value for lightness, green, or magenta, depending on the color mode selection. See Table 16 for each mode's valid range.
Defaults: Factory = 100
Omitted = 0

third-color-coordinate: integer; selects a value for saturation, blue, or yellow, depending on the color mode selection. See Table 16 for each mode's valid range.
Defaults: Factory = 0
Omitted = 0

Example: Host ^[E]cTCK4C2F4
Setup **GCURSOR 180,50,100**

Table 16
SET GIN CURSOR COLOR PARAMETER VALUES

Parameter	HLS	RGB	CMY
first-color-coordinate	0 — 360° (Hue)	0 — 100 (Red)	0 — 100 (Cyan)
second-color-coordinate	0 — 100 (Lightness)	0 — 100 (Green)	0 — 100 (Magenta)
third-color-coordinate	0 — 100 (Saturation)	0 — 100 (Blue)	0 — 100 (Yellow)

SET GIN CURSOR SPEED

Determines how fast the GIN crosshair cursor moves across the screen when the Joydisk is pressed. (Can be saved in nonvolatile memory.)

Host: ^[E]c**IJ** normal-speed
shifted speed
Setup: **GSPEED** normal-speed
shifted speed

normal-speed: integer; determines the speed of the GIN cursor when the Joydisk is pressed. Valid range is 1 (slow) through 12 (fast).
Defaults: Factory = 8
Omitted = 1

shifted-speed: integer; determines the speed of the GIN cursor when both the Joydisk and the Shift key are pressed. Valid range is 1 (slow) through 12 (fast).
Defaults: Factory = 4
Omitted = 1

SET GIN DISPLAY START POINT

Specifies the initial point for GIN inking or GIN rubberbanding.

Host: **EcIX** device-function-code
start-point
Setup: **GINSTARTPOINT** device-function-code
start-point

device-function-code: integer; identifies a device and function combination. See Table 15 (under SET GIN AREA) for valid device-function codes.
Defaults: Factory = (none)
Omitted = 0

start-point: xy-coordinate; specifies the beginning point of an ink or rubberband line. Valid range for x and y is 0 through 4095.
Defaults: Factory = (none)
Omitted = 0,0

Example: Host **EcIX9 ' azSpM**
Setup **GINSTARTPOINT 8,53,1000**

SET GIN GRIDDING

Defines an invisible grid that affects all subsequent Locate and Pick operations by allowing the GIN cursor to move only to the grid's intersecting points.

Host: **EcIG** device-function-code
x-grid-spacing
y-grid-spacing
Setup: **GINGRIDDING** device-function-code
x-grid-spacing
y-grid-spacing

device-function-code: integer; identifies a device and function combination. All device-function codes shown in Table 15 (under SET GIN AREA) are valid except 10 and 18.
Defaults: Factory = (none)
Omitted = 0

x-grid-spacing: integer; sets the horizontal spacing between vertical grid lines. Valid range is 0 through 4095.
Defaults: Factory = 0
Omitted = 0

y-grid-spacing: integer; sets the vertical spacing between horizontal grid lines. Valid range is 0 through 4095.
Defaults: Factory = 0
Omitted = 0

Assigning 0 to either *x-grid-spacing* or *y-grid-spacing* disables gridding in that direction. Assigning 0 to both these parameters disables the gridding feature altogether.

You can use gridding only for the Locate and Pick functions.

GIN gridding specified for device-function code 0 (Joydisk-Locate) also enables gridding for 4010 GIN.

Example: Host **EcIG8A9A9**
Setup **GINGRIDDING 8,25,25**

SET GIN INKING

Turns inking on or off for subsequent Locate or Stroke operations.

Host: **EcII** device-function-code
inking-mode
Setup: **GININKING** device-function-code
inking-mode

device-function-code: integer; identifies a device and function combination. Only device-function codes for Locate and Stroke shown in Table 15 (under SET GIN AREA) are valid.
Defaults: Factory = 0
Omitted = 0

inking-mode: integer; selects an inking mode. Valid values are:

0 Disables inking
1 Draws a line between the last two Locate or Stroke points
2 Draws the first line between the GIN display start-point and the next Locate or Stroke point, then draws subsequent lines as in *inking-mode 1*

Defaults: Factory = 0
Omitted = 0

If you enable GIN inking and GIN rubberbanding with *rubberbanding-mode* set to 2, then *inking-mode* operates as though set to 2, even if you set it to 1.

You can't select GIN inking if you've enabled key-press-and-release GIN.

Example: Host **EcII82**
Setup **GININKING 8,2**

SET GIN REPORT FORMAT

Specifies the amount of information returned to the host in each GIN report.

Host: $^{E}_{C}$**IK** report-format
Setup: **GINREPORT** report-format

report-format: integer; specifies the format of GIN reports. Valid range is 0 through 7 (Table 17 shows the format selected by each parameter value).
Defaults: Factory = 0
Omitted = 0

See *Reports* at the end of these commands for information about GIN Locate, Pick, and Stroke Reports.

Example: Host $^{E}_{C}$**IK4**
Setup **GINREPORT 4**

Table 17
GIN REPORT FORMATS

Parameter Value	Report Format	Reports Affected
0	Separate integer reports give the segment number and Pick-ID	Pick
1	An array reports the segment number and Pick-ID (as a pair of integer reports) for each detectable Pick point subordinate to the Picked segment	Pick
2	Each detectable segment generates a separate Pick report	Pick
3	Combines report formats 1 and 2	Pick
4	Report includes the view number as an integer report	Pick Locate Stroke
5	Combines report formats 1 and 4	Pick Locate Stroke
6	Combines report formats 2 and 4	Pick Locate Stroke
7	Combines report formats 1, 2, and 4	Pick Locate Stroke

SET GIN RUBBERBANDING

Turns rubberbanding on or off for GIN Locate operations.

Host: ^[E]c**IR** device-function-code
rubberbanding-mode

Setup: **GINRUBBERBAND** device-function-code
rubberbanding-mode

device-function-code: integer; identifies a device and function combination. Only device-function codes for the Locate function (0, 8, 16, 48, and 56) are valid (see Table 15 under SET GIN AREA).

Defaults: Factory = (none)
Omitted = 0

rubberbanding-mode: integer; selects a rubberbanding operation. Valid values are:

0 Disables rubberbanding
1 Draws a rubberband line between the last GIN Locate point and the cursor position
2 Draws a rubberband line between the GIN display start-point and the cursor position, then draws subsequent rubberband lines as in mode 1

Defaults: Factory = 0
Omitted = 0

Rubberbanding works only with the Locate function.

When *rubberbanding-mode* is set to 1, the user must send one point before the first line can be drawn.

If GIN inking is turned off, the rubberband line disappears as each GIN point is sent.

You can't select GIN rubberbanding if you've enabled key-press-and-release GIN.

Example: Host ^[E]c**IR81**
Setup **GINRUBBERBAND 8,1**

SET GIN STROKE FILTERING

Restricts the number of Stroke Reports sent to the host.

Host: **EcIF** device-function-code
distance-filter
time-filter

Setup: **GINFILTERING** device-function-code
distance-filter
time-filter

device-function-code: integer; identifies a device and function combination. Valid values are 10 and 18 (see Table 15 under SET GIN AREA).

Defaults: Factory = (none)
Omitted = Error

distance-filter: integer; specifies the minimum distance (in terminal space units) that the pen or puck must move before generating a GIN Stroke Report. Valid range is 0 through 4095.

Defaults: Factory = 0
Omitted = 0

time-filter: integer; specifies the minimum interval (in milliseconds) that must elapse between GIN Stroke Reports. Valid range is 0 through 32767.

Defaults: Factory = 0
Omitted = 0

The terminal always sends a report for the first point in a Stroke, regardless of the filter settings.

If you assign values to both filters, then the requirements of each filter must be met before the terminal sends the next point.

Filtering does not affect the cursor movement, but does affect the image formed by inking.

Example: Host **EcIF:A82**
Setup **GINFILTERING 10,24,2**

SET GIN WINDOW

Creates a window in terminal space for use by the SET GIN AREA command.

Host: ^{E}cIW lower-left-corner
upper-right-corner
Setup: **GINWINDOW** lower-left-corner
upper-right-corner

lower-left-corner: xy-coordinate; specifies one corner of the GIN window. Valid range for x and y is 0 through 4095.
Defaults: Factory = 0,0
Omitted = 0,0

upper-right-corner: xy-coordinate; specifies the opposite corner of the GIN window. Valid range for x and y is 0 through 4095.
Defaults: Factory = 4095,4095
Omitted = 4095,4095

Example: Host ^{E}cIW^{S}P**p**y^{S}P**Y**#^{D}T**W**"**Y**
Setup **GINWINDOW 100,100,359,479**

SET GRAPHICS AREA WRITING MODE

Specifies whether the terminal overwrites or replaces a character or marker in the graphics area. (Can be saved in nonvolatile memory.)

Host: ^{E}c**MG** writing-mode
Setup: **GAMODE** writing-mode

writing-mode: integer (keyword in Setup); valid entries are:

Host	Setup	
0	replace	Specifies replace
1	overstrike	Specifies overstrike

Defaults: Factory = 1 (overstrike)
Omitted = 0 (replace)

This command affects alphatext in the graphics area, markers, and string-precision graphtext.

SET GRAPHTEXT CHARACTER PATH

Specifies whether a graphtext character is written above, below, to the left of, or to the right of the previous graphtext character.

Host: ^[E]c**MN** direction
Setup: **GTPATH** direction

direction: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	right	Equal to rotation angle
1	left	180° greater than rotation angle
2	up	90° greater that rotation angle
3	down	90° less than rotation angle

Defaults: Factory = 0 (right)
Omitted = 0 (right)

The effect of the character path setting is relative to the rotation angle specified in SET GRAPHTEXT ROTATION.

Example: Host ^[E]c**MN2**
Setup **GTPATH UP**

SET GRAPHTEXT FONT

Selects a character font for displaying stroke-precision graphtext.

Host: ^[E]c**MF** font-number
Setup: **GTFONT** font-number

font-number: integer; specifies a character font. Valid range is 0 through 32767.

Defaults: Factory = 0 if ASCII keyboard
1 if Swedish keyboard
2 if German keyboard
3 if United Kingdom keyboard
9 if Danish/Norwegian keyboard
12 if French keyboard
Omitted = 0

Fonts 0, 1, 2, 3, 9, and 12 are predefined as listed in Table 18. Use the SET GRAPHTEXT FONT GRID command to define new fonts.

Example: Host ^[E]c**MF<**
Setup **GTFONT 12**

SET GRAPHTEXT FONT GRID

Creates a graphtext font and specifies the dimensions of the invisible grid used for defining the characters.

Host: **EcSG** font-number
grid-width
grid-height

Setup: **GTGRID** font-number
grid-width
grid-height

font-number: integer; names the graphtext font for which a font grid is being defined. Valid range is 0 through 32767.
Defaults: Factory = (none)
Omitted = 0

grid-width: integer; specifies the width of the grid in terminal space units. Valid range is 1 through 4095.
Defaults: Factory = (none)
Omitted = Error

grid-height: integer; specifies the height of the grid in terminal space units. Valid range is 1 to 4095.
Defaults: Factory = (none)
Omitted = Error

You must use this command before defining stroke-precision graphtext characters.

The terminal uses the current pivot point to position the font grid and to define the character's pivot point (see the SET PIVOT POINT command).

Example: Host **EcSG4A>B8**
Setup **GTGRID 4,30,40**

Table 18
PREDEFINED GRAPHTEXT FONTS

Font Number	Graphtext Font
0	Standard ASCII
1	Swedish
2	German
3	United Kingdom
9	Danish/Norwegian
12	French

SET GRAPHTEXT PRECISION

Selects string or stroke precision for displaying graphtext characters.

Host: ^{E}c**MQ** precision
Setup: **GTPRECISION** precision

precision: integer (keyword in Setup); selects the precision used to display graphtext. Valid entries are:

Host	Setup	
1	string	Specifies string precision
2	stroke	Specifies stroke precision

Defaults: Factory = 2 (stroke)
Omitted = Error

When string precision is selected, the terminal uses the same character set used for alphatext (see the SET ALPHATEXT FONT command). When stroke precision is selected, the terminal uses stroke characters from one of the terminal's graphtext fonts (see the SET GRAPHTEXT FONT command).

Example: Host ^{E}c**MQ2**
Setup **GTPRECISION STROKE**

SET GRAPHTEXT ROTATION

Specifies the rotation angle (in degrees) for subsequent graphtext strings.

Host: ^{E}c**MR** angle
Setup: **GTROTATION** angle

angle: real; specifies the rotation angle in degrees. Valid range is -32767.0 through 32767.0.
Defaults: Factory = 0.0
Omitted = 0.0

Stroke-precision graphtext can be displayed at any rotation angle, and the characters in the text string rotate in concert with the line of text.

String-precision graphtext can also be displayed at any rotation angle; however, when you rotate a text string, the individual characters rotate to the nearest multiple of 90° as shown in Table 19.

Example: Host ^{E}c**MRD-!**
Setup **GTROTATION -77,-1**

Table 19
STRING-PRECISION CHARACTER ROTATION

Text-String Rotation	Character Rotation
0.0 — 45.0°	0°
45.0 — 135.0°	90°
135.0 — 225.0°	180°
225.0 — 315.0°	270°
315.0 — 360.0°	0°

SET GRAPHTEXT SIZE

Sets the size of graphtext.

Host: **EcMC** width
height
spacing

Setup: **GTSIZE** width
height
spacing

width: integer; specifies the width (in terminal space units) of a graphtext character. Valid range is 0 through 4095; 0 specifies the default value.

Defaults: Factory = 39
Omitted = 39

height: integer; specifies the height (in terminal space units) of a graphtext character. Valid range is 0 through 4095; 0 specifies the default value.

Defaults: Factory = 59
Omitted = 59

spacing: integer; specifies the spacing (in terminal space units) between adjacent characters in the same graphtext string. Valid range is 0 through 4095.

Defaults: Factory = 12
Omitted = 0

For stroke-precision graphtext, the *width* and *height* parameters define the size of a character, and the *spacing* parameter determines the size of the space between character cells.

For string-precision graphtext, the *width* and *spacing* parameters are accepted but ignored). Table 20 gives the *height* ranges (in terminal space units) that yield the first three character sizes available.

Example: Host **EcMCA>B8:**
Setup **GTSIZE 30,40,10**

Table 20
STRING-PRECISION GRAPHTEXT SIZE EXAMPLES[a]

Specified Height	Resulting Size (Pixels)
1 — 88	7 x 9
89 — 146	14 x 18
147 — 205	21 x 27

[a] **These examples assume you've used the default window size.**

SET GRAPHTEXT SLANT

Specifies how much each stroke-precision graphtext character slants (from vertical).

Host: $^{E}_{C}$**MA** slant-angle
Setup: **GTSLANT** slant-angle

slant-angle: real; specifies the angle (in degrees) that each character slants. Valid range is -32767.0 through 32767.0.
Defaults: Factory = 0.0
Omitted = 0.0

The terminal slants each character around the character's pivot point.

If you specify a positive angle, characters slant to the right (clockwise). If you specify a negative angle, characters slant to the left (counterclockwise).

Example: Host $^{E}_{C}$**MA:0**
Setup **GTSLANT 10,0**

SET HARDCOPY MONOCHROME ATTRIBUTES

Specifies the line termination ($^{C}_{R}$ or $^{C}_{R}{}^{L}_{F}$) that the terminal sends to a monochrome printer. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**QE** monochrome-attributes
Setup: **HCMONOCHROME** monochrome-attributes

monochrome-attributes: integer array (integer in Setup); specifies the line termination used in data sent to monochrome copiers. The array count in host syntax is always 1. Valid values are:

0 Sends just a $^{C}_{R}$ at the end of a line
1 Sends a $^{C}_{R}{}^{L}_{F}$ combination at the end of a line

Defaults: Factory = 1
Omitted = 0

This command affects copies made on either text or graphics monochrome printers.

Example: Host $^{E}_{C}$**QE10**
Setup **HCMONOCHROME 0**

SET IMAGE ORIENTATION

Selects whether the long axis of an image aligns with the long or short axis of a hard copy created through the COPIER port. (Can be saved in nonvolatile memory.)

Host: ^{E}c**QO** orientation
Setup: **HCORIENT** orientation

orientation: integer (keyword in Setup); specifies how an image is oriented on a copy. Valid entries are:

Host	Setup	
0	horizontal	Long axis of image on long axis of media
1	vbottom	Long axis of image on short axis of media, positioned at bottom
2	vcenter	Long axis of image on short axis of media, positioned in center
3	vtop	Long axis of image on short axis of media, positioned at top

Defaults: Factory = 0 (horizontal)
Omitted = 0 (horizontal)

At any of the vertical orientations (vbottom, vcenter, or vtop) the image size is reduced to fit on the narrow axis of the media.

This command is used only with Tektronix 4691 and 4692 Color Copiers.

Example: Host ^{E}c**QO2**
Setup **HCORIENT VCENTER**

SET KEY EXECUTE CHARACTER

Specifies the key-execute character which is used to toggle macro expansion between the host and the terminal. (Can be saved in nonvolatile memory.)

Host: ^{E}c**KY** key-execute-character
Setup: **KEYEXCHAR** key-execute-character

key-execute-character: integer (small integer in Setup); specifies the character. Valid range is 0 through 127.
Defaults: Factory = 16 (^{D}L)
Omitted = 0 (^{N}U)

If the terminal is sending a macro to the host, the key-execute character means "use what follows locally." If the terminal is using a macro locally, the key-execute character means "send what follows to the host."

The key-execute character has this effect only on key macros.

Example: Host ^{E}c**KYA8**
Setup **KEYEXCHAR 24**

SET LINE INDEX

Specifies the color index for all subsequent lines, panel boundaries, and markers.

Host: ^{E}c**ML** line-index
Setup: **LINEINDEX** line-index

line-index: integer; specifies the color index. Valid range is 0 through 32767 (values greater than 15 set *line-index* to 15).
Defaults: Factory = 1
Omitted = 0

If you specify a line index greater than the highest numbered index for the surface you are drawing on, the terminal uses the highest numbered index for that surface. (The highest numbered index for a surface is $2^{n}-1$, where n is the number of bit planes assigned to that surface.)

Example: Host ^{E}c**ML4**
Setup **LINEINDEX 4**

SET LINE STYLE

Specifies the line style for subsequent lines and panel boundaries.

Host: ^{E}c**MV** line-style
Setup: **LINESTYLE** line-style

line-style: integer; selects a predefined line style. Valid range is 0 through 7.
Defaults: Factory = 0
Omitted = 0

Changing the line style does not affect lines already drawn.

Issuing a PAGE command resets the line style to 0.

Example: Host ^{E}c**MV1**
Setup **LINESTYLE 1**

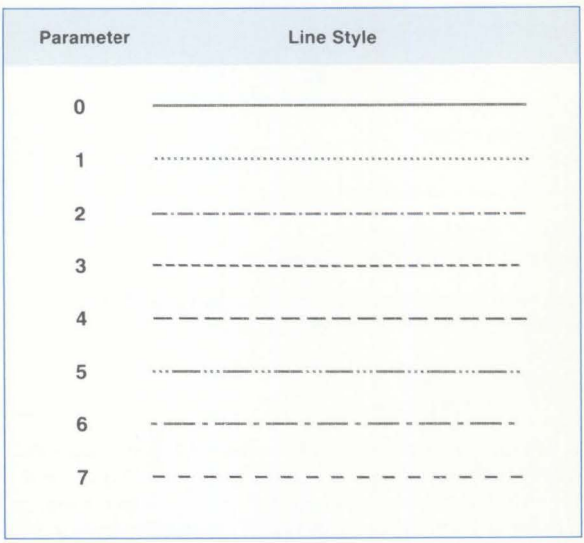


Figure 5. Line Styles.

SET MARKER TYPE

Selects the kind of marker to be drawn.

Host: ^[E]cMM marker-number
Setup: **MARKERTYPE** marker-number

marker-number: integer; selects a predefined marker type. Valid range is 0 through 10.
Defaults: Factory = 0
Omitted = 0

Changing marker types does not affect markers already displayed.

Example: Host ^[E]cMM:
Setup **MARKERTYPE 10**

Parameter	Marker Type	Parameter	Marker Type
0	·	6	□
1	+	7	◇
2	+	8	⊡
3	✳	9	◈
4	⬯	10	◘
5	✕		

Figure 6. Marker Types.

SET PARITY

Specifies the kind of parity the terminal uses when transmitting data to the host. (Can be saved in nonvolatile memory.)

Host: ^{E}c**NP** parity-mode
Setup: **PARITY** parity-mode

parity-mode: integer (keyword in Setup); selects the kind of parity the terminal uses. Valid entries are:

Host	Setup	
0	none	Parity bit set to 0
1	odd	Odd parity
2	even	Even parity
3	high	Parity bit set to 1
4	data	No parity; parity bit available for data

Defaults: Factory = 0 (none)
Omitted = 0 (none)

The terminal ignores the parity bit in characters it receives from the host.

On CX Terminals this command has no effect on data passing over the coax cable; however, if you issue this command while the terminal is in HOSTPORT COAX, the parity selection becomes effective immediately on the RS-232 line.

SET PICK APERTURE

Sets the size of the GIN cursor aperture used in GIN Pick operations.

Host: ^{E}c**IA** aperture-width
Setup: **GINPICKAPERTURE** aperture-width

aperture-width: integer; specifies the width of the Pick aperture (in terminal space units). Valid range is 0 through 4095.

Defaults: Factory = 8
Omitted = 0

Example: Host ^{E}c**IA8**
Setup **GINPICKAPERTURE 8**

SET PICK ID

Assigns a number that identifies a group of graphics primitives in a segment.

Host: ^cMI pick-ID-number
Setup: **SGPICKID** pick-ID-number

pick-ID-number: integer; Valid range is 0 through 32767.
Defaults: Factory = 1
Omitted = 0

The terminal automatically assigns a Pick ID number of 1 to the beginning of every segment definition.

To keep part of a segment from being picked, use 0 as the *pick-ID-number*.

Example: Host ^cMIA0
Setup **SGPICKID 16**

SET PIVOT POINT

Specifies a coordinate point as the pivot point for segments defined with BEGIN SEGMENT and for user-defined graphtext characters.

Host: ^cSP pivot-point
Setup: **SGPIVOT** pivot-point

pivot-point: xy-coordinate; specifies the pivot point's location. Valid range for x and y is 0 through 4095.
Defaults: Factory = 0,0
Omitted = 0,0

Example: Host ^cSP#ag6F
Setup **SGPIVOT 2841,412**

SET PIXEL BEAM POSITION

Sets the position of the pixel beam in the pixel viewport.

Host: ^cRH beam-position
Setup: **PXPOSITION** beam-position

beam-position: xy-coordinate; specifies the pixel beam position in the pixel viewport. Valid range for x is 0 through 639; for y, 0 through 511.
Defaults: Factory = 0,479
Omitted = 0,0

Set the pixel beam position relative to the lower-left corner of the pixel viewport. If you set the pixel beam to a position outside the pixel viewport, the terminal moves the beam to the nearest pixel inside the viewport.

Example: Host ^c^spy^sY
Setup **PXPOSITION 100,100**

SET PIXEL VIEWPORT

Specifies the pixel viewport's size and position in raster memory space.

Host: ^[E]cRS lower-left
upper-right
Setup: **PXVIEWPORT** lower-left
upper-right

lower-left: xy-coordinate; specifies one corner of the pixel viewport. Valid range for x is 0 through 639; for y, 0 through 511.
Defaults: Factory = 0,0
Omitted = 0,0

upper-right: xy-coordinate; specifies the opposite corner of the pixel viewport. Valid range for x is 0 through 639; for y, 0 through 511.
Defaults: Factory = 639,479
Omitted = 0,0

Pixel commands operate within the pixel viewport that was most recently defined by this command. When you create a new pixel viewport, the terminal resets the pixel beam position to the upper-left corner of the pixel viewport.

Example: Host ^[E]cRS^[S]p^[S]py^[S]pY!pb!B
Setup **PXVIEWPORT 100,100,200,200**

SET PORT BAUD RATE

Sets the baud rate for one of the 2PP1 ports. (Can be saved in nonvolatile memory.)

Host: ^[E]cPR port-identifier
baud-rate
Setup: **PBAUD** port-identifier
baud-rate

port-identifier: string; specifies the port. Valid entries are:
P0: PORT 0
P1: PORT 1
Defaults: Factory = (none)
Omitted = Error

baud-rate: integer; specifies the rate at which data will be transmitted to the port. Valid rates are: 75, 110, 134, 150, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, and 19200.
Defaults: Factory = 2400
Omitted = Error

Example: Host ^[E]cPR3P0:BV^[S]p
Setup **PBAUD P0:,2400**

SET PORT BLACK WHITE INVERSION

Instructs the rasterizer to reverse the black and white colors. (Can be saved in nonvolatile memory.)

Host: **EcPJ** port-identifier
image-polarity
Setup: **PINVERSION** port-identifier
image-polarity

port-identifier: string; names which port the rasterizer is attached to. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

image-polarity: integer (keyword in Setup).

Host	Setup	
0	negative	Reverses black and white
1	positive	Does not reverse black and white

Defaults: Factory = 0 (negative)
Omitted = 0 (negative)

Example: Host **EcPJ3P0:0**
Setup **PINVERSION P0:,0**

SET PORT EOF STRING

Sets the port end-of-file string for one of the 2PPI ports. (Can be saved in nonvolatile memory.)

Host: **EcPE** port-identifier
EOF-string
Setup: **PEOF** port-identifier
EOF-string

port-identifier: string; specifies the port. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

EOF-string: integer array (delimited string in Setup); specifies the ASCII characters in the port EOF string. Valid range for each character in the array is ADE 0 through 127.

Defaults: Factory = Empty array
Omitted = Empty array

The port EOF string is different than the EOF string that is used for the host port.

The port EOF string can have no more than 10 characters.

Example: Host **EcPE3P0:2B?B:**
Setup **PEOF P0:,'/*'**

SET PORT FLAGGING MODE

Sets the flagging mode for one of the 2PPI ports. (Can be saved in nonvolatile memory.)

Host: ^{E}c**PF** port-identifier
flagging-mode
start-character
stop-character

Setup: **PFLAG** port-identifier
flagging-mode
start-character
stop-character

port-identifier: string; specifies the port. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = 0 (none)
Omitted = 0 (none)

flagging-mode: integer (keyword in Setup); specifies a type of flagging. Valid entries are:

Host	Setup	
0	none	No flagging
1	char	Character flagging
2	DTR/CTS	DTR/CTS signal line flagging

Defaults: Factory = 0 (none)
Omitted = 1 (char)

start-character: integer (small integer in Setup); specifies the character that indicates the terminal can receive data (for use with character flagging). Valid range is 0 through 127 (0 specifies ^{D}1).

Defaults: Factory = (none)
Omitted = 0 (^{D}1)

stop-character: integer (small integer in Setup); specifies the character that indicates the terminal is not ready to receive data (for use with character flagging). Valid range is 0 through 127 (0 specifies ^{D}3).

Defaults: Factory = (none)
Omitted = 0 (^{D}3)

Example: Host ^{E}c**PF3P0:1A1A3**
Setup **PFLAG P0:,CHAR,17,19**

SET PORT IMAGE ORIENTATION

Specifies how the rasterizer orients the image on a copy. (Can be saved in nonvolatile memory.)

Host: **EcPO** port-identifier
orientation
Setup: **PORIENT** port-identifier
orientation

port-identifier: string; names the port the rasterizer is attached to. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

orientation: integer (keyword in Setup); specifies how an image is oriented on the copy paper. Valid entries are:

Host	Setup	
0	horizontal	Long axis of image on long axis of media
1	vbottom	Long axis of image on short axis of media, positioned at bottom
2	vcenter	Long axis of image on short axis of media, positioned in center
3	vtop	Long axis of image on short axis of media, positioned at top

Defaults: Factory = 0 (horizontal)
Omitted = 0 (horizontal)

Example: Host **EcPO3P0:2**
Setup **PORIENT P0:,VCENTER**

SET PORT NUMBER OF COPIES

Specifies the number of copies produced on the copier attached to the rasterizer. (Can be saved in nonvolatile memory.)

Host: **EcPN** port-identifier
number-of-copies
Setup: **PCOPIES** port-identifier
number-of-copies

port-identifier: string; names the port the rasterizer is attached to. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

number-of-copies: integer. Valid range is 0 through 32767.

Defaults: Factory = 1
Omitted = 0

Example: Host **EcPN3P1:5**
Setup **PCOPIES P1:,5**

SET PORT PARITY

Specifies the parity scheme for a 2PPI port. (Can be saved in nonvolatile memory.)

Host: **^cPP** port-identifier
parity-mode

Setup: **PPARITY** port-identifier
parity-mode

port-identifier: string; specifies the port. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

parity-mode: integer (keyword in Setup); specifies the parity used. Valid entries are:

Host	Setup	
0	low	Parity bit set to 0
1	odd	Odd parity
2	even	Even parity
3	high	Parity bit set to 1
4	none	No parity; parity bit is omitted

Defaults: Factory = 4
Omitted = 0

SET PORT STOP BITS

Sets the number of stop bits and data bits sent to the specified port. (Can be saved in nonvolatile memory.)

Host: **^cPB** port-identifier
number-of-stop-bits
number-of-data-bits

Setup: **PBITS** port-identifier
number-of-stop-bits
number-of-data-bits

port-identifier: string; specifies a port. Valid entries are:

P0: PORT 0
P1: PORT 1

Defaults: Factory = (none)
Omitted = Error

number-of-stop-bits: integer; specifies the number of stop bits in characters sent to the specified port. Valid values are 1 and 2.

Defaults: Factory = 1
Omitted = Error

number-of-data-bits: integer; specifies the number of data bits in characters sent to the specified port. Valid values are 5, 6, 7, and 8 (this count does not include the parity bit).

Defaults: Factory = 8
Omitted = Error

Example: Host **^cPB3P0:27**
Setup **PBITS P0:,2,7**

SET PROMPT STRING

Specifies the string that initiates the terminal's Prompt mode. (Can be saved in nonvolatile memory.)

Host: ^{E}c**NS** prompt-string
Setup: **PROMPTSTRING** prompt-string

prompt-string: integer array (delimited string in Setup); specifies the characters in the prompt string. Valid range for each character is ADE 0 through 127.
Defaults: Factory = Empty array
Omitted = Empty array

The prompt string can be up to 10 characters long.

On CX Terminals the prompt string does not affect data on the coax cable. However, if you define a prompt string while the terminal is in HOSTPORT COAX, the new prompt string becomes effective immediately for RS-232 communications.

Example: Host ^{E}c**NS3F1F2F3**
Setup **PROMPTSTRING /abc/**

SET QUEUE SIZE

Specifies the size (in bytes) of the terminal's input queue for RS-232 communications. (Can be saved in nonvolatile memory.)

Host: ^{E}c**NQ** queue-size
Setup: **QUEUESIZE** queue-size

queue-size: integer; indicates the size in bytes of the input queue; valid range is 1 through 65535.
Defaults: Factory = 300
Omitted = Error

A very large input queue may affect the terminal's ability to store and display graphics information (especially on the 4106 and CX4106 Terminals, which have limited memory).

A very small input queue may cause data to be lost when the input queue overflows.

On CX Terminals, you can set the input queue size when the terminal is set to HOSTPORT COAX, but the setting will not take effect until the terminal is set to HOSTPORT RS-232.

Example: Host ^{E}c**NQx4**
Setup **QUEUESIZE 900**

SET REPORT EOM FREQUENCY

Specifies how often the terminal sends the EOL string in reports to the host. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**IM** EOM-frequency
Setup: **REOM** EOM-frequency

EOM-frequency: integer. Valid values are:

0 Less frequently
1 More frequently

Defaults: Factory = 1
Omitted = 1

In this terminal, the EOM (end-of-message) indicator is always the EOL string (which is defined by the SET EOL STRING command).

SET REPORT MAXIMUM LINE LENGTH

Specifies the maximum number of characters per line in reports sent to the host.

Host: $^{E}_{C}$**IL** maximum-line-length
Setup: **RLINELENGTH** maximum-line-length

maximum-line-length: integer; specifies the maximum number of characters per line. Valid range is 0 through 65535.

Defaults: Factory = 0
Omitted = 0

You can disable this feature by setting the terminal's maximum line length to zero.

If the terminal has a report to send that will exceed the maximum line length, the terminal inserts the EOL string into the report.

SET REPORT SIGNATURE CHARACTERS

Assigns the signature characters used in reports sent to the host.

Host: ^EcIS report-type-code
signature-character
terminating-signature-character

Setup: **RSIGCHARS** report-type-code
signature-character
terminating-signature-character

report-type-code: integer; specifies which type of report the characters are assigned to. Must be a GIN device-function code (see Table 15 under SET GIN AREA), or one of the following:

-3 Non-GIN reports
-2 Graphics position report (in response to REPORT GIN POINT with a parameter of -2)
-1 Both GIN and non-GIN reports

Defaults: Factory = (none)
Omitted = 0

signature-character: integer; selects a character for use as the signature character in the specified report type. Valid range is 0 through 127.

Defaults: Factory = 0
Omitted = 0

terminating-signature-character: integer; selects a character for use as the terminating signature character in the specified report type. Valid range is 0 through 127.

Defaults: Factory = 0
Omitted = 0

If you set the signature or terminating signature character to ^U, it is omitted from reports.

If you enable GIN for more than one device at a time, a different pair of signature characters is required for each enabled GIN device. Also, the signature characters for GIN reports should be different than the signature characters for non-GIN reports so the host can tell them apart if the reports are interleaved.

SET SEGMENT CLASS

Assigns a segment to classes used for segment class-matching operations.

Host: **ESCSA** segment-number
removal-array
addition-array

Setup: **SGCLASS** segment-number
removal-array
addition-array

segment-number: integer; specifies a segment. Valid values are:

-3	All segments that match the current matching class
-2	The default for segments not yet defined
-1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

removal-array: integer array; specifies the classes that the specified segment is removed from. Valid values are:

-1	All classes
1 — 64	Individual classes in the array

Defaults: Factory = Empty array
Omitted = Empty array

addition-array: integer array; specifies the classes that the specified segment is added to. Valid values are:

-1	All classes
1 — 64	Individual classes in the array

Defaults: Factory = Empty array
Omitted = Empty array

Example: Host **ESCSA22 = >3345**
Setup **SGCLASS 2,<13,14>,3,4,5**

SET SEGMENT DETECTABILITY

Specifies whether a segment is detectable in a GIN Pick operation.

Host: **ESCSD** segment-number detectability

Setup: **SGDETECT** segment-number detectability

segment-number: integer; specifies a segment. Valid values are:

-3	All segments that match the current matching class
-2	The default for segments not yet defined
-1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

detectability: integer (keyword in Setup); specifies whether a segment can be detected in a GIN Pick operation. Valid entries are:

Host	Setup	
0	no	Cannot be detected
1	yes	Can be detected

Defaults: Factory = 0 (no)
Omitted = 0 (no)

Example: Host **ESCSDA01**
Setup **SGDETECT 16,YES**

SET SEGMENT DISPLAY PRIORITY

Sets a segment's display and GIN Pick priority.

Host: **ESCSS** segment-number
priority-number

Setup: **SGPRIORITY** segment-number
priority-number

segment-number integer; specifies a segment. Valid values are:

-3	All segments that match the current matching class
-2	The default for segments not yet defined
-1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

priority-number: integer; specifies the display priority. Must be in the range -32768 through 32767.

Defaults: Factory = 0
Omitted = 0

If more than one eligible segment falls within the Pick aperture, the terminal picks the segment with the highest display priority number.

If two or more segments with the same priority fall within the Pick aperture, the terminal (rather than your program) determines which segment is picked.

Example: Host **ESCSSB04**
Setup **SGPRIORITY 32,4**

SET SEGMENT EDIT MODE

Specifies how segment editing affects the rest of the segment.

Host: **ESC UH** edit-mode
Setup: **SGEDIT** edit-mode

edit-mode: integer (keyword in Setup); specifies how changes made while editing a segment affect the trailing part of the segment. Must be one of the following:

Host	Setup	
0	none	No change
1	position	Position change only
2	attribute	Primitive attribute changes only
3	both	Both position and primitive attribute changes

Defaults: Factory = 0 (none)
Omitted = 0 (none)

This command only affects the trailing part of the segment — that is, the graphics primitives that follow the editing.

Example: Host **ESC UH1**
Setup **SGEDIT POSITION**

SET SEGMENT HIGHLIGHTING

Turns highlighting (blinking) on or off for a segment.

Host: **ESC SH** segment-number highlighting
Setup: **SGHIGHLIGHT** segment-number highlighting

segment-number: integer; specifies a segment. Valid values are:

-3	All segments that match the current matching class
-2	The default for segments not yet defined
-1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

highlighting: integer (keyword in Setup). Valid entries are:

Host	Setup	
0	no	Turns blinking off
1	yes	Turns blinking on

Defaults: Factory = 0 (no)
Omitted = 0 (no)

Example: Host **ESC SHA00**
Setup **SGHIGHLIGHT 16,NO**

SET SEGMENT IMAGE TRANSFORM

Scales, rotates, and positions a segment.

Host: **EcSI** segment-number
x-scale-factor
y-scale-factor
rotation-angle
position

Setup: **SGTRANSFORM** segment-number
x-scale-factor
y-scale-factor
rotation-angle
position

segment-number: integer; specifies a segment. Valid values are:

–3	All segments that match the current matching class
–2	The default for segments not yet defined
–1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

x-scale-factor: real; specifies how many times to enlarge or reduce the segment in the x-direction. Valid range is –32767 through 32767.

Defaults: Factory = 1.0
Omitted = 0.0

y-scale-factor: real; specifies how many times to enlarge or reduce the segment in the y-direction. Valid range is –32767 through 32767.

Defaults: Factory = 1.0
Omitted = 0.0

rotation-angle: real; specifies the rotation angle in degrees. Valid range is –32767 through 32767. A negative number specifies clockwise rotation, a positive number specifies counterclockwise rotation.

Defaults: Factory = 0.0
Omitted = 0.0

position: xy-coordinates; specifies the new location (in terminal space) of the segment's pivot point. Valid range for x and y is 0 through 4095.

Defaults: Factory = 0,0
Omitted = 0,0

Image transform operations are not cumulative. They always start at the size and position of the *original* segment definition.

When using SET SEGMENT IMAGE TRANSFORM or SET SEGMENT POSITION, avoid positions that extend segment parts to x- or y-coordinates greater than 8091 or less than –4096. Segments extending that far outside the normal 0 to 4095 terminal space may not be displayed properly.

Specifying Segment 0 (the crosshair cursor) is not allowed. Use the SET SEGMENT POSITION command instead.

Example: Host **ESCSI1202000SPjbSPB**
Setup **SGTRANSFORM 1,2,0,2,0,0,0,10,10**

SET SEGMENT POSITION

Moves a segment's pivot point to a specified position in terminal space.

Host: **ESCSX** segment-number
position
Setup: **SGPOSITION** segment-number
position

segment-number: integer; specifies a segment. Valid values are:

–3	All segments that match the current matching class
–2	The default for segments not yet defined
–1	All segments
0	The crosshair cursor
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = 0

position: xy-coordinate; specifies the new location (in terminal space) of the segment's pivot point. Valid range for x and y is 0 through 4095.
Defaults: Factory = 0,0
Omitted = 0,0

Issuing a SET PIVOT POINT command cancels the effect of any previous SET SEGMENT POSITION commands for Segment –2.

Example: Host **ESCSX1#\}#]**
Setup **SGPOSITION 1,500,500**

SET SEGMENT SCALE ROTATE

Scales or rotates a segment.

Host: **EcSJ** segment-number
x-scale-factor
y-scale-factor
rotation-angle

Setup: **SGSCALE** segment-number
x-scale-factor
y-scale-factor
rotation-angle

segment-number: integer; specifies the segment to be scaled or rotated. Must be one of the following:

–5	All segments called in subsequent CALL SEGMENT commands (only affects segments displayed in the calling segment)
–3	All segments that match the current matching class
–2	The default for segments not yet defined
–1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = Error

x-scale-factor: real; specifies the factor by which the segment will be scaled horizontally. Valid range is –32767.0 through 32767.0.

Defaults: Factory = 1.0
Omitted = 0.0

y-scale-factor: real; specifies the factor by which the segment will be scaled vertically. Valid range is –32767.0 through 32767.0.

Defaults: Factory = 1.0
Omitted = 0.0

rotation-angle: real; specifies the factor by which the segment will be rotated. A negative value specifies a clockwise rotation, and a positive values specifies a counterclockwise rotation. Valid range –32767.0 through 32767.0.

Defaults: Factory = 0.0
Omitted = 0.0

Unlike the SET SEGMENT IMAGE TRANSFORM command, the SET SEGMENT SCALE ROTATE command does not change the position of a segment.

Example: Host **EcSJ%1!1!00**
Setup **SGSCALEROTATE –5,1,–1,1,–1,0,0**

SET SEGMENT VISIBILITY

Sets the visibility attribute for a segment or group of segments.

Host: **EcSV** segment-number
visibility

Setup: **SGVISIBILITY** segment-number
visibility

segment-number: integer; specifies a segment. Valid values are:

-3	All segments that match the current matching class
-2	The default for segments not yet defined
-1	All segments
0	The crosshair cursor
1 — 32767	An individual segment

Defaults: Omitted = 0

visibility: integer (keyword in Setup); specifies whether a segment is visible in the current view. Must be one of the following:

Host	Setup	
0	no	Invisible
1	yes	Visible

Defaults: Factory = 1
Omitted = 0

If you specify that a segment be invisible in the current view, the segment disappears either immediately or the next time the view is renewed, depending on the fixup level specified in the SET FIXUP LEVEL command.

Segments are visible by default in the view in which they are created (the current view when the segment definition was closed). However, segments must specifically be made visible in any view other than the one in which they are created.

Enabling GIN makes the GIN cursor segment visible. You can turn visibility on or off for a segment being used as GIN cursor, but when you disable GIN the segment's visibility will return to the value it had before GIN was enabled.

Example: Host **EcSVA01**
Setup **SGVISIBILITY 16,YES**

SET SEGMENT WRITING MODE

Selects the writing mode used when displaying a segment.

Host: **EcSM** segment-number
writing-mode

Setup: **SGMODE** segment-number
writing-mode

segment-number: integer; specifies a segment. Valid values are:

–3	All segments that match the current matching class
–2	The default for segments not yet defined
–1	All segments
1 — 32767	An individual segment

Defaults: Factory = (none)
Omitted = 0

writing-mode: integer (keyword in Setup); selects which writing mode is used. Must be one of the following:

Host	Setup	
1	set	SET mode
2	xor	XOR mode
3	and	AND mode
4	or	OR mode

Defaults: Factory = 1 (set)
Omitted = Error

In SET mode, the terminal replaces color indices in graphics memory with color indices of the segment being defined. The previous color index stored in the pixel is simply replaced.

In AND, OR, or XOR mode, the terminal performs a bit-by-bit logical operation between the index already in each graphics memory cell and the index of each pixel in the segment being displayed.

Example: Host **EcSMA01**
Setup **SGMODE 16,SET**

SET SNOOPY MODE

Specifies whether the terminal displays ASCII control characters.

Host: ^{E}c**KS** snoopy-mode
Setup: **SNOOPY** snoopy-mode

snoopy-mode: integer (keyword in Setup). Must be one of the following:

Host	Setup	
(none)	no	Takes the terminal out of Snoopy mode
1	yes	Puts the terminal in Snoopy mode

Defaults: Factory = 0 (no)
Omitted = 1 (yes)

In Snoopy mode, the terminal displays control characters instead of executing them, with the following exceptions. Characters that are normally filtered out of the host's data stream (such as a prompt sequence) are still filtered and not displayed. For example, if you're using DC1/DC3 flagging for output or for both input and output, ^{D}1 and ^{D}3 are executed but do not display. ^{L}F is displayed and causes a new display line.

Only the user can take the terminal out of Snoopy mode — the host cannot do it. To terminate Snoopy mode, press the Cancel key, or enter Setup and issue *SNOOPY NO*.

SET STOP BITS

Specifies the number of stop bits appended to each character the terminal transmits. (Can be saved in nonvolatile memory.)

Host: ^{E}c**NB** number-of-stopbits
Setup: **STOPBITS** number-of-stopbits

number-of-stopbits: integer specifies the number of stop bits. Valid values are 1 and 2.
Defaults: Factory = 1
Omitted = Error

On CX Terminals, this command has no effect on data passing over the coax cable. However, if you issue SET STOP BITS while in HOSTPORT COAX, the new setting takes effect immediately on the RS-232 line.

SET SURFACE COLOR MAP

Sets the color map for a graphics writing surface.

Host: **EcTG** surface-number
color-mixtures
Setup: **CMAP** surface-number
color-mixtures

surface-number: integer; names the surface for which color mixtures are being defined. Valid values are 1 through 4, and –1 (the super surface).
Defaults: Factory = (none)
Omitted = Error

color-mixtures: integer array (of quadruples); assigns color mixtures to one or more color indices. Table 21 lists the default color mixtures.
Defaults: Factory = See Table 21
Omitted = Error

The integers in the *color-mixtures* array are in groups of four called quadruples. The first integer in each quadruple specifies a color index; the following three integers specify the color coordinates (HL, RGB, or CMY) that define the color mixture for that color index. In host syntax, the array count precedes the quadruples and should include each integer of all the quadruples.

The valid ranges for the first, second, and third coordinates in each system are:

HLS	*RGB and CMY*
–32768 — 32767	0 — 100
0 — 100	0 — 100
0 — 100 (or 1000 — 1100)	0 — 100 (or 1000 to 1100)

The color mixture is specified in the HLS, RGB, or CMY coordinate system, according to the SET COLOR MODE command. Adding 1000 to the third color coordinate of the index causes the color to blink by alternating between visible and invisible.

The number of bit planes reserved for a surface limits the number of indices that can be set up for that surface. The highest index number for a surface is $2^n - 1$, where n is the number of bit planes set up for the surface.

Unlike the 4105, color maps for the 4106, 4107, 4109, and CX Terminals are not saved in nonvolatile memory.

If you change the color mixture for Index 0 in the graphics area, you are changing only the background colors. Any graphics drawn in Index 0 are always drawn as transparent.

Example: Host **EcTG1430F40**
Setup **CMAP 1,3,0,100,0**

SET SURFACE DEFINITIONS

Sets the number of surfaces and the number of bit planes in each surface.

Host: ^[E]cRD surface-definitions
Setup: **SDEFINITIONS** surface-definitions

surface-definitions: integer array; specifies the number of bit planes for each surface.
Defaults: Factory = 4 (Surface 1 with four bit planes)
Omitted = Error

This command defines each surface by assigning bit planes to a surface number. The first integer (the array count) in *surface-definitions* specifies how many writing surfaces the terminal is to have. Subsequent integers specify the number of bit planes for their respective surfaces. You cannot specify more than four bit planes for a surface.

The number of bit planes in each surface determines the highest numbered index that can be written into pixels on that surface. A surface with n bit planes is allowed color indices from 1 to $2^n - 1$.

Example: Host ^[E]cRD211
Setup **SDEFINITIONS 1,1**

Table 21
DEFAULT GRAPHICS AREA COLOR MIXTURES

Color Index	Color Mixture	Color Coordinates								
		H	L	S	R	G	B	C	M	Y
0	Erase Index[a]	0	0	0	0	0	0	100	100	100
1	White	0	100	0	100	100	100	0	0	0
2	Red	120	50	100	100	0	0	0	100	100
3	Green	240	50	100	0	100	0	100	0	100
4	Blue	0	50	100	0	0	100	100	100	0
5	Cyan	300	50	100	0	100	100	100	0	0
6	Magenta	60	50	100	100	0	100	0	100	0
7	Yellow	180	50	100	100	100	0	0	0	100
8	Orange	150	50	100	100	50	0	0	50	100
9	Green-Yellow	210	50	100	50	100	0	50	0	100
10	Green-Cyan	270	50	100	0	100	50	100	0	50
11	Blue-Cyan	330	50	100	0	50	100	100	50	0
12	Blue-Magenta	30	50	100	50	0	100	50	100	0
13	Red-Magenta	90	50	100	100	0	50	0	100	50
14	Dark Gray	0	33	0	33	33	33	67	67	67
15	Light Gray	0	66	0	66	66	66	34	34	34

[a] **If you specify Index 0 in the SET SURFACE COLOR MAP command, you are setting the graphics background color, but you are not changing the transparent appearance of graphics drawn using Index 0, the erase index.**

SET SURFACE PRIORITIES

Sets the priority of each writing surface and thus determines which surfaces appear to be in front of others.

Host: **ESC RN** surface-numbers-and-priorities
Setup: **SPRIORITIES** surface-numbers-and-priorities

surface-numbers-and-priorities: integer array; each pair of integers in the array specifies a surface number and its priority. Valid surface and priority values range from 1 through 4.

Defaults: Factory = 1,1
Omitted = Error

Example: Host **ESC RN814233241**
Setup **SPRIORITIES 1,4,2,3,3,2,4,1**

SET SURFACE VISIBILITY

Sets the visibility of one or more surfaces without affecting surface priorities.

Host: **ESC RI** surface-numbers-and-visibilities
Setup: **SVISIBILITY** surface-numbers-and-visibilities

surface-numbers-and-visibilities: integer array; pairs of integers that specify a surface and its visibility. The first integer in each pair is a surface number, which must be in the range 1 through 4. The second integer in each pair specifies the visibility, which must be one of the following:

0 Invisible (no objects displayed)
1 Visible
2 Blinking (alternates between visible and invisible)

Defaults: Factory = 1,1
Omitted = Error

Example: Host **ESC RI810213241**
Setup **SVISIBILITY 1,0,2,1,3,2,4,1**

SET TAB STOPS

Sets tab stops at the specified positions. (Can be saved in nonvolatile memory.)

Host: **ESC KB** tab-positions
Setup: **TABS** tab-positions

tab-positions: integer array; specifies one or more tab stops. Valid values are:

-2 Resets tab stops to factory default
-1 Sets tabs stops at every column (in Setup, you can use -1 or the keyword *all*)
0 Clears all tab stops
1 — 132 Sets tab stops at specified columns

Defaults: Factory = Every eighth column (1, 9, 17, . . .)
Omitted = 0

Example: Host **ESC KB35:?**
Setup **TABS 5,10,15**

SET TABLET HEADER CHARACTERS

Selects the key-characters used in GIN Stroke Reports. (Can be saved in nonvolatile memory.)

Host: ^{E}cIH key-characters
Setup: **GINSHEADERCHARS** key-characters

key-characters: integer (keyword in Setup); selects a set of characters. Valid entries are:

Host	Setup	
0	letters	Selects Z, 1, 2, 3, J, and O
1	control	Selects Z, 1, 2, 3, ^{S}B, and ^{U}s

Defaults: Factory = 0 (letters)
Omitted = 0 (letters)

If *key-characters* is 0 (*letters* in Setup), the key-characters in GIN Stroke Reports are:

- Z, 1, 2, or 3 for the first point in a Stroke
- J for subsequent points in a Stroke
- O for the last point in a Stroke

If *key-characters* is 1 (*control* in Setup), the key-characters are:

- Z, 1, 2, or 3 for the first point in a Stroke
- ^{S}B for subsequent points in a Stroke
- ^{U}s for the last points in a Stroke

The key-character accompanying the first Stroke point represents the button on the tablet's puck pressed by the user.

SET TEXT INDEX

Specifies the color index for graphtext characters and for alphatext characters in the graphics area.

Host: ^{E}cMT text-index
Setup: **GTINDEX** text-index

text-index: integer; specifies the color index for text in the graphics area. Valid range is 0 through 15.
Defaults: Factory = 1
Omitted = 0

Alphatext displayed in the dialog area is not affected by this command. Use the SET DIALOG AREA INDEX command for dialog area alphatext.

If you display text on a surface with fewer than four bit planes, the highest numbered text index you can specify is the same as the highest numbered surface color index. The highest numbered color index for a surface is $2^{n}-1$, where n is the number of bit planes assigned to that surface.

Example: Host ^{E}cMT2
Setup **GTINDEX 2**

SET TRANSMIT DELAY

Specifies the amount of time the terminal waits between sending an EOM character and the next line of text. (Can be saved in nonvolatile memory.)

Host: ^cND transmit-delay
Setup: **XMTDELAY** transmit-delay

transmit-delay: integer; indicates the transmit delay in milliseconds; Valid range is 0 to 65535.
Defaults: Factory = 100
Omitted = 0

Because of the resolution of the terminal's internal timer, the actual delay time may be up to 33 milliseconds longer than the time specified by this command.

On CX Terminals this command has no effect on data passing over the coax cable. However, if you issue SET TRANSMIT DELAY while in HOSTPORT COAX, the new transmit delay takes effect immediately on the RS-232 line.

Example: Host ^cNDL8
Setup **XMTDELAY 200**

SET TRANSMIT RATE LIMIT

Specifies the maximum transmit baud rate. (Can be saved in nonvolatile memory.)

Host: ^cNL rate-limit
Setup: **XMTLIMIT** rate-limit

rate-limit: integer; specifies the terminal's transmit rate limit; valid range is 110 through 65535.
Defaults: Factory = 19200
Omitted = Error

On CX Terminals this command has no effect on data passing over the coax cable. However, if you issue SET TRANSMIT RATE LIMIT while in HOSTPORT COAX, the new transmit rate limit takes effect immediately on the RS-232 line.

Example: Host ^cNLR<
Setup **XMTLIMIT 900**

SET VIEW ATTRIBUTES

Selects the surface, wipe index, and border index for the current view.

Host: **EcRA** surface-number
wipe-index
border-index

Setup: **VATTRIBUTES** surface-number
wipe-index
border-index

surface-number: integer; identifies the surface on which the viewport is located. Valid values are –1 through 4.

Defaults: Factory = 1
Omitted = 0

wipe-index: integer; specifies the color index used for wiping (erasing) the viewport. Valid range is 0 through 65535.

Defaults: Factory = 0
Omitted = 0

border-index: integer; specifies the color index used for displaying a border around the viewport. Valid range is 0 through 65535.

Defaults: Factory = 1
Omitted = 0

If 0 is specified for *surface-number*, the current surface for the view is left unchanged. If –1 is specified for *surface-number*, then the super surface is used.

You can't specify a wipe index greater than the maximum color index of the surface. The maximum color index for a surface is $2^n - 1$, where n is the number of bit planes assigned to that surface.

If you specify a border index greater than the maximum color index of the surface, the terminal uses the maximum index as the border index.

Example: Host **EcRA002**
Setup **VATTRIBUTES 0,0,2**

SET VIEW DISPLAY CLUSTER

Specifies the views that are in a view cluster.

Host: ^[E]cRQ view-numbers
Setup: **VCLUSTER** view-numbers

view-numbers: integer array; specifies which views are to belong to the cluster. Valid values are:

-2	Removes all views in the current view's cluster
-1	Clusters all 64 possible views together in one display cluster (includes any views yet to be created)
0	Specifies the current view
1 — 64	Names a specific view

Defaults: Factory = (none)
Omitted = Removes all views from all clusters

A view cannot belong to more than one display cluster; including a view in one cluster automatically removes it from any other cluster.

Example: Host ^[E]cRQ328A0
Setup **VCLUSTER 2,8,16**

SET VIEWPORT

Specifies the size and position of the current view's viewport on the display screen.

Host: ^[E]cRV first-corner
second-corner
Setup: **VIEWPORT** first-corner
second-corner

first-corner: xy-coordinate; specifies the location of one corner of the viewport. Valid range for x is 0 through 4095; for y, 0 through 3071.

Defaults: Factory = 0,0
Omitted = 0,0

second-corner: xy-coordinate; specifies the location of the opposite corner of the viewport. Valid range for x is 0 through 4095; for y, 0 through 3071 (0 through 3045 in HOSTPORT COAX).

Defaults: Factory = 4095,3071 (4095,3045 in COAX)
Omitted = 0,0

On CX Terminals, when the terminal is in HOSTPORT COAX, the viewport's maximum y value is 3045.

Segments that are visible when a viewport change occurs do not automatically move to their new screen locations. To make the terminal redraw segments at their new screen locations, issue a RENEW VIEW or PAGE command immediately after changing the viewport.

Example: Host ^[E]cRV^[S]p by^[S]pL5\ |2Q
Setup **VIEWPORT 50,100,2372,2800**

SET WINDOW

Sets the boundaries of the current view's window in terminal space. (Can be saved in nonvolatile memory.)

Host: ^{E}c**RW** first-corner
second-corner
Setup: **WINDOW** first-corner
second-corner

first-corner: xy-coordinate specifies one corner of the window. Valid range for x and y is 0 through 4095.
Defaults: Factory = 0,0
Omitted = 0,0

second-corner: xy-coordinate; specifies the opposite corner of the window. Valid range for x and y is 0 through 4095.
Defaults: Factory = 4095,3130
Omitted = 0,0

Segments that are visible when a window change occurs do not automatically move to their new screen locations. To redraw segments at their new screen locations, issue a RENEW VIEW or PAGE command immediately after changing the window.

The SET WINDOW command also sets the window for all other views in the same view display cluster (see the SET VIEW DISPLAY CLUSTER command).

Example: Host ^{E}c**RW**^{S}P**by**^{S}P**L5**\' **|2Q**
Setup **WINDOW 50,100,2372,2800**

SET 4014 ALPHATEXT SIZE

Selects between two alphatext character sizes and allows the terminal to be compatible with earlier Tektronix terminals.

Host: ^{E}c size-code

size-code: specifies one of two sizes for alphatext. Must be one of four ASCII characters:

8 or 9 Fits up to 80 characters on one line
: or ; Fits up to 128 characters on one line

Defaults: Factory = 80 characters per line

This command is a graphics primitive that you can include in a segment definition. It affects the terminal only when the dialog area is disabled. When using the 128 characters-per-line size, the terminal displays characters only in the North American ASCII font.

SET 4014 LINE STYLE

Specifies line styles compatible with Tektronix 4010 and 4110 Series Terminals.

Host: ESC line-style-code

line-style-code: single character; specifies one of the predefined line styles shown in Figure 7.
Defaults: Factory = Solid line

This command does the same thing as the SET LINE STYLE command. Codes *h* through *o* indicate line styles that are displayed with a defocused beam on Tektronix 4014, 4016, and 4114 Terminals. This command lets you emulate these other terminal's displays, but the 4100 and CX4100 Series Terminals don't defocus the lines.

Character	Line Style	Emulated Terminals
`	————————	4014/4016
a	·····	4014/4016
b	—·—·—·—·—·—	4014/4016
c	- - - - - - - - - - - - - -	4014/4016
d	— — — — — — — —	4014/4016
e	··—···—···—···—	4112/4113/4114
f	— · — · — · — · —	4112/4113/4114
g	- - - - - - - - -	4112/4113/4114
h	————————	4014/4016/4114
i	·····	4014/4016/4114
j	—·—·—·—·—·—	4014/4016/4114
k	- - - - - - - - - - - - - -	4014/4016/4114
l	— — — — — — — —	4014/4016/4114
m	··—···—···—···—	4014/4016/4114
n	· — · — · — · — · —	4014/4016/4114
o	- - - - - - - - -	4014/4016/4114

Figure 7. 4014 Line Styles.

STATUS

Displays the current parameter values for most commands and command clusters.

Setup: **STATUS** name

name: string; the Setup command name or command cluster name for which you want the current parameter values.
Defaults: Factory = (none)
Omitted = All commands

If there is no status message for the command, try requesting the status of the cluster the command belongs to. The cluster names are:

- ANSI
- COAX
- Communications
- Dialog
- General
- Graphics
- Hardcopy
- Keyboard
- Pixels
- Report/Input
- Segments
- Surfaces
- Views
- 2PPI

Three special names that you can use are:

- Memoryblocks
- Pmemoryblocks[1]
- Version
- Level
- Terminal

You can get the status of all commands by entering just **STATUS**.

[1] **If you don't have Option 21, the terminal reports *0 0* in response to this special inquiry code.**

TEK HEADER CHARACTER (CX Only)

Specifies the character that the terminal recognizes as the Tek header character. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**OI** header
Setup: **TEKHEADER** header

header: integer; specifies the EBCDIC value of the Tek header character. Valid values are 0 and 64 through 254.
Defaults: Factory = 112
Omitted = 0

The character that you assign with this command must match the Tek header character that occurs in the data stream. The translation method being used does not affect the character.

This command does not affect RS-232 communications.

TRANSLATION METHOD (CX Only)

Specifies the method the terminal uses to translate characters in the CX interface buffer. (Can be saved in nonvolatile memory.)

Setup: **TMETHOD** translation-method

translation-method: integer; specifies a translation method. Valid values are:

0 The host should use the translate tables listed in the *CX4100 Series Host Support* manual
1 The host I/O routine should use the algorithm that follows to send ASCII data to the terminal

Defaults: Factory = 1
Omitted = 0

This command does not affect RS-232 communications.

4010 HARDCOPY

Generates a hard copy of the entire screen.

Host: $^{E}_{C}$$^{E}_{B}$

This command has the same effect as pressing the S Copy key.

4100-STYLE REPORTS

The terminal uses the reports described here to return graphics or terminal status data to the host. When the terminal sends any of these reports to the host, it automatically enters Bypass mode. Table 22 describes the kind of value used for each type of report parameter.

Table 22
REPORT PARAMETER TYPES

Type	Description	Example
Character	An ASCII character with ADE in the range 0 — 127	a 97
Integer	Encoded form of an integer; reported as three ASCII characters sent in this order: Hi-I, Hi-I, Lo-I.	"M-
XY-Coordinate	Encoded form of the 12-bit precision x- and y-coordinate values; reported as five ASCII characters sent in the following order: Hi-Y, Extra, Lo-Y, Hi-X, Lo-X	'!: SP-
4010 XY-Coordinate	Encoded form of the 10-bit precision x- and y-coordinate values; reported as four ASCII characters sent in the following order: Hi-X, Lo-X, Hi-Y, Lo-Y	` :/4
String	A group of ASCII characters preceded by an array count, which is an integer report that tells the number of characters in the string.	4TEST
Integer Array	A series of integer reports preceded by a an array count, which is an integer report that tells how many individual array items will follow.	3123
Real	Two integer reports, the mantissa and the exponent, used to send fractional values to the host.	3!

Answerback Report

The terminal sends the answerback string to the host in response to an ENQUIRY command. Unlike other reports, the answerback string does not begin with a count of the characters, and does not conclude with an EOL string. Also unlike other reports, the terminal does not enter Bypass mode when it sends the answerback string to the host.

Device Status Report

This report is sent in response to REPORT DEVICE STATUS. The report has the following format:

signature character
device-specifier
status-integer
EOL string

device-specifier: two character-reports; specifies the device whose status is being reported:

P0	2PPI PORT P0
P1	2PPI PORT P1
HC	The COPIER port
S_PS_P	Indicates an invalid *device-specifier* string sent in the REPORT DEVICE STATUS command

status-integer: integer report; reports the device status.

The binary bits of the *status-integer* for the 2PPI ports hold the following information:

B0	1 = The interface is present
B1	1 = The port is busy
B2 — B15	X = (don't care)

The binary bits of the *status-integer* for the COPIER port hold the following information:

B0	1 = The interface is present
B1	1 = The port is busy
B2	X = (don't care)
B3	1 = A copier is connected and powered up
B4 — B15	X = (don't care)

Error Report

This report is sent in response to the REPORT ERRORS command and has the following format:

report-for-one-error . . .
terminating signature character
EOL string

Each *report-for-one-error* describes an error in the following format:

signature character
error-code
severity-level
error-count
EOL string

error-code: four character-reports; consists of the opcode (two characters), the number of the parameter's position in the command causing the error, followed by an error-type digit. Refer to Appendix B of the Programmers Reference Manual for a list and explanation of error codes.

severity-level: integer report; specifies the severity level of the error that occurred; see Appendix B of the Programmers Reference Manual for an explanation of severity levels.

error-count: integer report; the number of times the terminal has detected that error since power-up or since the last REPORT ERRORS command.

GIN Reports

When GIN is enabled, the terminal reports GIN information each time the user initiates a GIN report.

Locate and Stroke Reports have the following format:

signature character
key
cursor-position
view-number[1]
EOL string

Pick Reports have this format:

signature character
key
cursor-position
view-number[1]
segment-number[2]
Pick-ID [2]
EOL string

The following paragraphs describe each element of GIN Locate, Pick, and Stroke Reports.

key: character report; indicates the action that initiated the report — either a user action or a REPORT GIN POINT command:

- If the user presses a keyboard key, the terminal reports the character assigned to the key that was pressed.
- If the user presses or releases a button on the tablet puck or stylus (or presses the stylus to the tablet), the terminal reports one of the characters shown in Table 23.
- If the host issues a REPORT GIN POINT command, the terminal returns a ^{S}P character.

For subsequent points of a Stroke report, the *key* report is the character *J* or ^{S}B, except that it is *O* or ^{U}S for the last point of the Stroke. The SET TABLET HEADER CHARACTERS command controls whether these characters are *J* and *O* or ^{S}B and ^{U}S.

[1] ***view-number*** **is not included in these reports unless you've used the SET GIN REPORT FORMAT command to specify that it be included.**

[2] ***segment number*** **and** ***Pick-ID*** **are reported as separate integer reports, as shown, unless you've used the SET GIN REPORT FORMAT command to specify that they be reported in an integer array.**

cursor-position: xy-coordinate report; reports the position of the GIN cursor, tablet stylus, or puck at the time of the GIN report.

view-number: integer report; reports the number of the view in which the GIN report took place. This parameter is not included in these reports unless you've used the SET GIN REPORT FORMAT command to specify that it be included — see the SET GIN REPORT FORMAT command description in the *4106/4107/4109/CX Programmers Supplement* for details.

segment-number: integer report; gives the number of the segment being Picked. If there is no Pickable segment in the Pick aperture, the segment number is reported as *0*.

pick-ID: integer report; gives the Pick-ID from the Picked segment. If there is no Pickable segment in the Pick aperture, the Pick ID is *0*.

The *segment number* and *Pick-ID* are reported as separate integer reports, as shown, unless you've used the SET GIN REPORT FORMAT command to specify that they be reported in an integer array. See the SET GIN REPORT FORMAT command description in the *4106/4107/4109/CX Programmers Supplement* for details.

Table 23
TABLET KEY REPORTS[a]

Tablet Input	Key	Key Code	
		Press	Release[b]
Stylus	Tip[c]	**Z** (ADE 90)	**z** (ADE 122)
	Side button	**1** (ADE 49)	**Q** (ADE 81)
Puck	Yellow button	**Z** (ADE 90)	**z** (ADE 122)
	White button	**1** (ADE 49)	**Q** (ADE 81)
	Blue button	**2** (ADE 50)	**R** (ADE 82)
	Green button	**3** (ADE 51)	**S** (ADE 83)

[a] **If the report is sent in response to a REPORT GIN POINT command from the host, the key report is $P (ADE 32).**

[b] **Key release codes are only transmitted if you've enabled GIN using a GIN code between 2056 and 2105.**

[c] **Pressing the stylus tip *down* reports the same character as *key press*; lifting the stylus *up* reports the same character as *key release*.**

Port Status Report

This report is sent in response to the REPORT PORT STATUS command. The Port Status Report has the following format:

signature character
port-identifier
port-information
EOL string

port-identifer: two character-reports; names the 2PPI port to which the Port Status Report pertains. Will be one of the following:

P0	2PPI PORT 0
P1	2PPI PORT 1
S_PS_P	Indicates an invalid *port-specifier* string sent in the REPORT PORT STATUS command

port-information: a series of integer reports, string reports, and integer array reports; reports the current values of the port's communication settings. The settings are reported in this order:

Integer report: *baud-rate*
Integer report: *parity*
Integer report: *stop-bits*
Integer report: *data-bits*
Integer report: *flagging-mode*
Integer report: *start-character*
Integer report: *stop-character*
String report: *protocol-identifier*
Integer array report: *EOF-string*
Integer array report: *EOL-string*

If the *port-identifier* is S_PS_P, then the *port-information* parameter is omitted.

Table 24
ERROR CODES IN SEGMENT STATUS REPORTS

Error Code	Meaning
-32767	The segment number in REPORT SEGMENT STATUS was invalid
-32766	The REPORT SEGMENT STATUS command specified a segment number for a nonexistent segment
-32765	The REPORT SEGMENT STATUS command included an invalid status code letter

Segment Status Report

This report is sent to the host in response to the REPORT SEGMENT STATUS command. The Segment Status Report has the following format:

report-for-one-segment . . .
terminating signature character
EOL string

Each *report-for-one-segment* describes the attributes of one segment in the following format:

signature character
segment-number
attribute-reports . . .
EOL string

segment-number: integer report; specifies the segment number of the segment being described, or a special error code. The error codes and their meanings are listed in Table 24.

attribute-report: report parameter type depends on query; reports the status of the segment's attributes, as requested in the REPORT SEGMENT STATUS command. Table 25 shows the status codes for each attribute along with its parameter type.

Table 25
FORMATS FOR SEGMENT ATTRIBUTE REPORTS

Status Code	Attribute	Format
A	Segment classes	Character report: **A** Integer array report: *class-numbers*
D	Detectability	Character report: **D** Integer report:*detectability*
H	Highlighting	Character report: **H** Integer report:*highlighting*
I	Image transform	Character report: **I** Real report: *x-scale-factor* Real report: *y-scale-factor* Real report: *rotation-angle* XY-report: *position*
M	Writing mode	Character report: **M** Integer report: *writing-mode*
P	Pivot point	Character report: **P** XY-report: *pivot-point*
S	Display priority number	Character report: **S** Integer report: *priority-number*
V	Visibility	Character report: **V** Integer report: *visibility*
X	Position	Character report: **X** XY-report: *position*

Terminal Settings Report

This report is sent in response to the REPORT TERMINAL SETTINGS command. The report has the following format:

signature character
opcode-report
parameter-report . . .
EOL string

opcode-report: two character-reports; comprises either an opcode for one of the terminal's commands, or one of the special inquiry codes listed in Table 27.

parameter-report: report parameter type depends on query; returns the command parameter values for the command specified in the *opcode-report* in the order that they appear in the command.

If the REPORT TERMINAL SETTINGS command specifies an opcode for a command that does not exist in the terminal, the *opcode-report* is $^{S}P^{S}P$.

The *parameter-reports* listed in Table 26, show the special inquiry codes along with the report parameters.

Table 26
SPECIAL INQUIRY CODES

Code	Report Contents
?M	Two encoded integers report (1) available program memory and (2) the largest contiguous block of program memory (both reported as a number of 16-byte units of memory).
?P	Two encoded integers report (1) available segment memory and (2) the largest contiguous block of segment memory (both reported as a number of 16-byte units of memory).[a]
?T	integer report: An encoded integer reports the terminal model number.
00	An encoded integer reports the firmware version installed in the terminal.
99	An encoded integer reports the level number of the firmware version installed in the terminal.

[a] **This special inquiry code is valid only for terminals with Option 21.**

Table 27
TERMINAL STATUS CHARACTER BITS

B7	B6	B5	B4	B3	B2	B1
0	1	HCU	V	A	0	1

4010 GIN Report

This report is sent in response to an ENABLE 4010 GIN command and the user pressing a key. It has the following format:

key
cursor-position
EOL string

key: character report; specifies the ASCII key that the user pressed.

cursor-position: 4010 xy-report; reports the location of the graphics cursor.

Since only the ten most significant bits of the x- and y-coordinates are reported, the reported values are an approximation of the graphics cursor position.

4010 Status Report

This report is sent in response to a REPORT 4010 STATUS command. The report has two forms, depending on whether 4010 GIN is enabled when the command is sent.

If 4010 GIN is *not* enabled, the report has the following format:

terminal-status
alpha-cursor-position
EOL string

If 4010 is enabled, the report has the following format:

graphics-cursor-position
EOL string

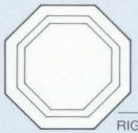
terminal-status: character report; reports the terminal status encoded into the seven bits of an ASCII character, shown in Table 27.

alpha-cursor-position and *graphics-cursor-position:* 4010 xy-report; reports in 10-bit form the position of either the alpha cursor or the graphics cursor.

See Table 28 for the meaning of Bit 3 and Bit 4 as represented in Table 27. Bit 5 (HCU) is set to 0 if a copier is attached to the COPIER port and is ready to accept a copy request; otherwise this bit is set to 1.

Table 28
IMPLICIT COMMAND MODE STATUS

V	A	Mode Status
0	0	The terminal is in Marker mode
0	1	The terminal is in Alpha mode
1	0	The terminal is in Vector mode
1	1	This combination doesn't occur



	JOYDISK RIGHT	JOYDISK UP	JOYDISK LEFT	JOYDISK DOWN	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Ctrl	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	D Eras / S Eras	{ / [	! / 1	@ / 2	# / 3	$ / 4	% / 5	^ / 6	& / 7	* / 8	(/ 9	) / 0	— / -	+ / =	} /]	Rub Out	7	8	9	-
Unshifted	-115	91	49	50	51	52	53	54	55	56	57	48	45	61	93	127	-62	-63	-64	-67
Shifted	-121	123	33	64	35	36	37	94	38	42	40	41	95	43	125	-34	-76	-77	-78	-81
Ctrl	-127	27	49	50	51	52	53	54	55	56	57	48	45	61	29	-35	-90	-91	-92	-95
Ctrl-Shifted	-133	27	33	0	35	36	37	30	38	42	40	41	31	43	29	-36	-104	-105	-106	-109

	Esc	~ / |	Q	W	E	R	T	Y	U	I	O	P	\ / \	Back Space	Line Feed	4	5	6	,
Unshifted	27	124	113	119	101	114	116	121	117	105	111	112	92	8	10	-59	-60	-61	-66
Shifted	-37	126	81	87	69	82	84	89	85	73	79	80	96	-40	-43	-73	-74	-75	-80
Ctrl	-38	124	17	23	5	18	20	25	21	9	15	16	28	-41	-44	-87	-88	-89	-94
Ctrl-Shifted	-39	126	17	23	5	18	20	25	21	9	15	16	28	-42	-45	-101	-102	-103	-108

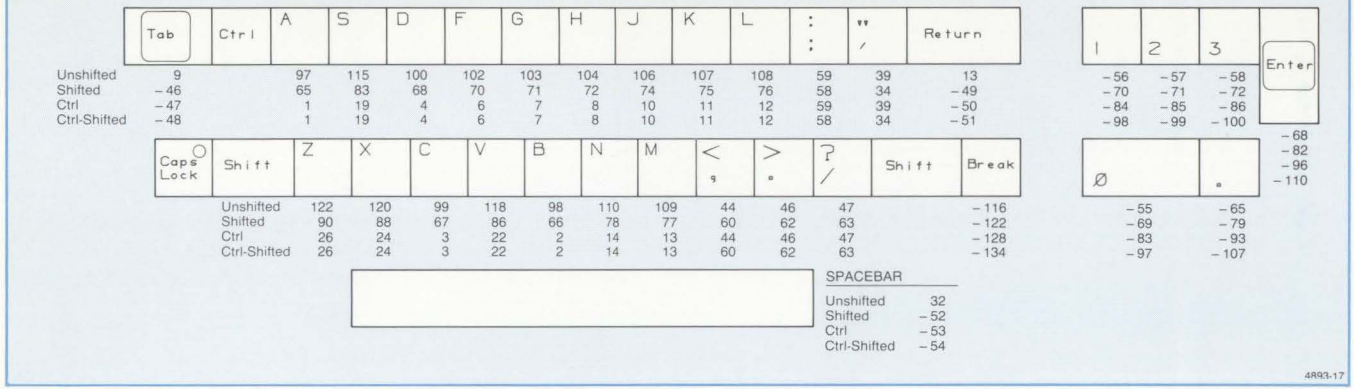
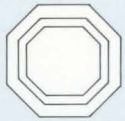


Figure 8. ASCII/North American Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn / Sys Rq	Clear / Cr Sel	~ `	! 1	@ 2	# 3	$ 4	% 5	^ 6	& 7	* 8	(9	) 0	_ -	+ =	←	Dup / PA1	Field Mark / PA2	7 / PF13	8 / PF14	9 / PF15
Unshifted	-179	-180	96	49	50	51	52	53	54	55	56	57	48	45	61	8	-199	-200	-62	-63	-64
Shifted	-184	-185	126	33	64	35	36	37	94	38	42	40	41	95	43	-40	-206	-207	-76	-77	-78
Control	-189	-190	96	49	50	51	52	53	54	55	56	57	48	45	61	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	126	33	0	35	36	37	30	38	42	40	41	31	43	-42	-220	-221	-104	-105	-106

	D Eras / S Eras	Esc / Er Inp	→	Q	W	E	R	T	Y	U	I	O	P	] [	\	Del			4 / PF16	5 / PF17	6 / PF18
Unshifted	-115	27	9	113	119	101	114	116	121	117	105	111	112	91	92	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	81	87	69	82	84	89	85	73	79	80	93	124	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	17	23	5	18	20	25	21	9	15	16	27	28	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	17	23	5	18	20	25	21	9	15	16	29	28	-36	-222	-109	-101	-102	-103

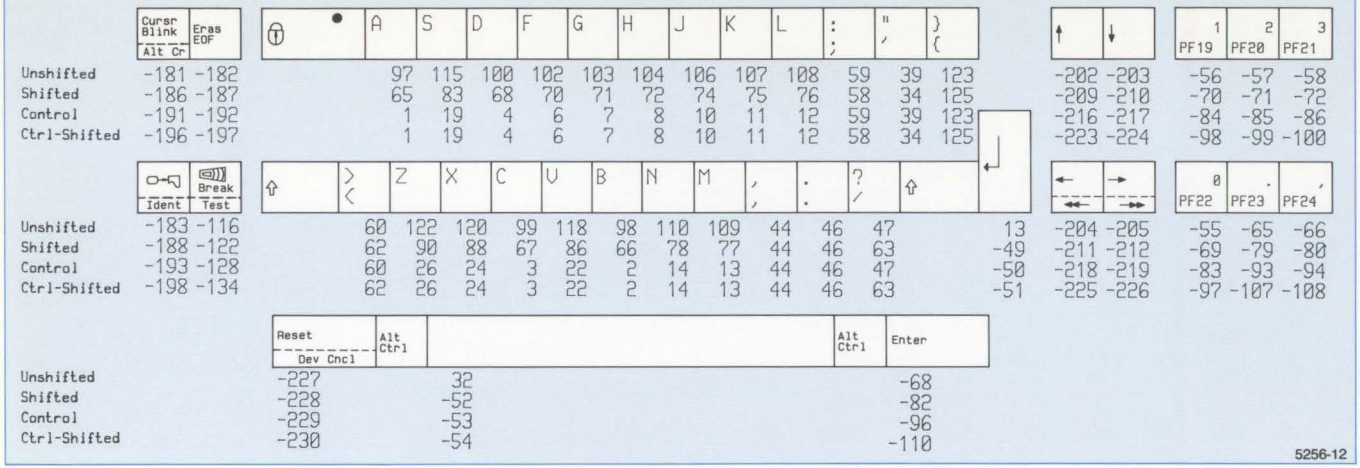


Figure 9. ASCII/North American Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.

	JOYDISK RIGHT	UP	LEFT	DOWN	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Ctrl	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	D Eras / S Eras	{ / [	! / ¦	@ / 2	£ / 3	$ / 4	% / 5	^ / 6	& / 7	* / 8	(/ 9	) / Ø	— / _	+ / =	} /]	Rub Out	7	8	9	-
Unshifted	-115	91	49	50	51	52	53	54	55	56	57	48	45	61	93	127	-62	-63	-64	-67
Shifted	-121	123	33	64	35	36	37	94	38	42	40	41	95	43	125	-34	-76	-77	-78	-81
Ctrl	-127	27	49	50	51	52	53	54	55	56	57	48	45	61	29	-35	-90	-91	-92	-95
Ctrl-Shifted	-133	27	33	0	35	36	37	30	38	42	40	41	31	43	29	-36	-104	-105	-106	-109

	Esc	¬ / ¦	Q	W	E	R	T	Y	U	I	O	P	\ / \	Back Space	Line Feed	4	5	6	,
Unshifted	27	124	113	119	101	114	116	121	117	105	111	112	92	8	10	-59	-60	-61	-66
Shifted	-37	126	81	87	69	82	84	89	85	73	79	80	96	-40	-43	-73	-74	-75	-80
Ctrl	-38	124	17	23	5	18	20	25	21	9	15	16	28	-41	-44	-87	-88	-89	-94
Ctrl-Shifted	-39	126	17	23	5	18	20	25	21	9	15	16	28	-42	-45	-101	-102	-103	-108

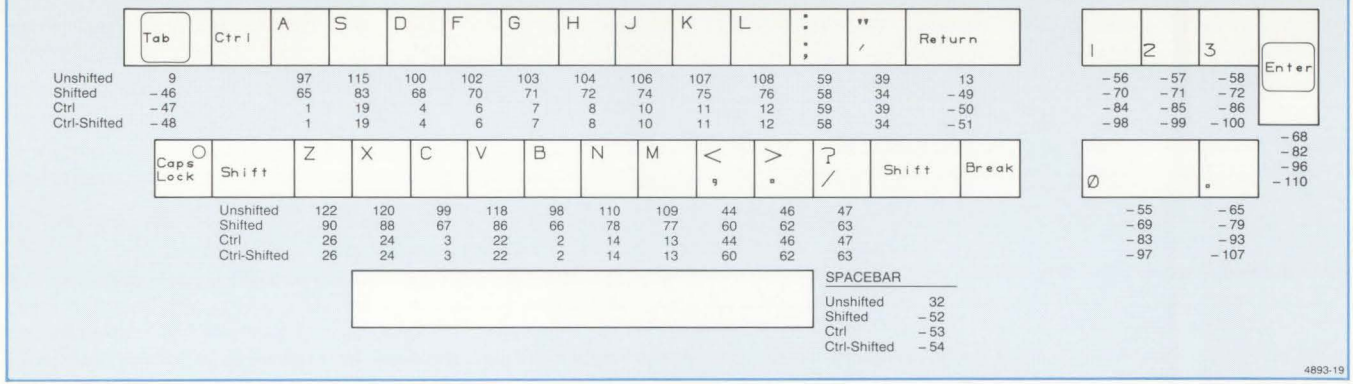
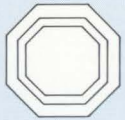


Figure 10. United Kingdom Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn / Sys Rq	Clear / Cr Sel	| / \	! / 1	" / 2	£ / 3	$ / 4	% / 5	& / 6	' / 7	(/ 8	) / 9	^ / 0	= / -	_	←	Dup / PA1	Field Mark / PA2	7 / PF13	8 / PF14	9 / PF15
Unshifted	-179	-180	92	49	50	51	52	53	54	55	56	57	48	45	95	8	-199	-200	-62	-63	-64
Shifted	-184	-185	124	33	34	35	36	37	38	39	40	41	94	61	95	-40	-206	-207	-76	-77	-78
Control	-189	-190	28	49	50	51	52	53	54	55	56	57	48	45	31	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	28	33	34	35	36	37	38	39	40	41	30	61	31	-42	-220	-221	-104	-105	-106

	D Eras / S Eras	Esc / Er Inp	→	Q	W	E	R	T	Y	U	I	O	P	` / @	{ / [	← Del / ⌧	⌂	⌧ –	4 / PF16	5 / PF17	6 / PF18
Unshifted	-115	27	9	113	119	101	114	116	121	117	105	111	112	64	91	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	81	87	69	82	84	89	85	73	79	80	96	123	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	17	23	5	18	20	25	21	9	15	16	0	27	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	17	23	5	18	20	25	21	9	15	16	96	123	-36	-222	-109	-101	-102	-103

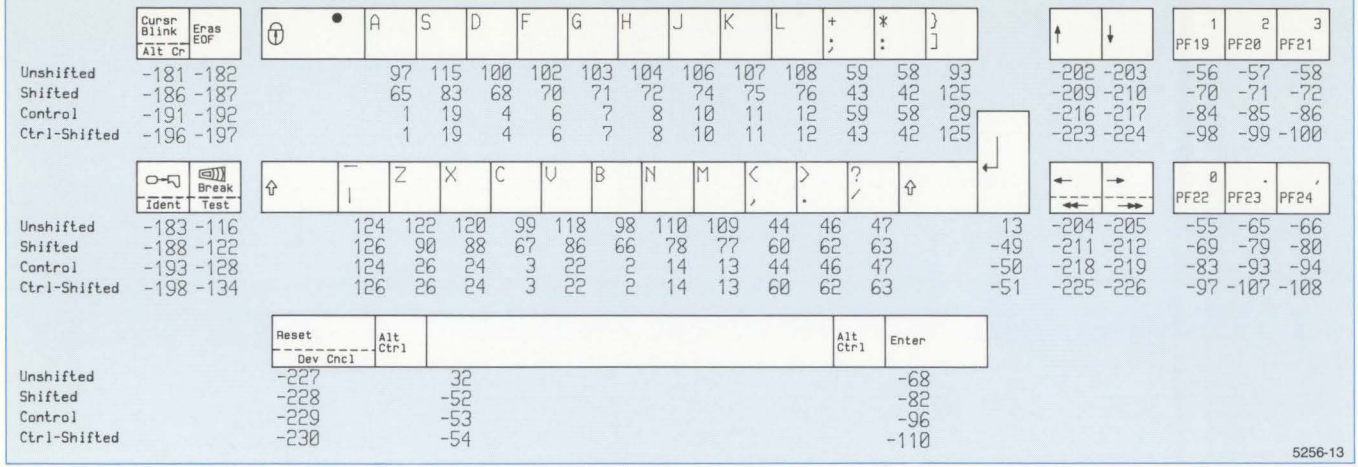
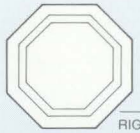


Figure 11. United Kingdom Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.



JOYDISK

	RIGHT	UP	LEFT	DOWN
Unshifted	– 135	– 136	– 137	– 138
Shifted	– 139	– 140	– 141	– 142
Ctrl	– 143	– 144	– 145	– 146
Ctrl-Shifted	– 147	– 148	– 149	– 150

G Eras Dialog	Cancel Setup	D Copy S Copy	Menu
– 111	– 112	– 113	– 114
– 117	– 118	– 119	– 120
– 123	– 124	– 125	– 126
– 129	– 130	– 131	– 132

F1	F2	F3	F4
128	129	130	131
136	137	138	139
– 2	– 3	– 4	– 5
– 10	– 11	– 12	– 13

F5	F6	F7	F8
132	133	134	135
140	141	142	143
– 6	– 7	– 8	– 9
– 14	– 15	– 16	– 17

	D Eras S Eras	✳ $	! &	2 é	3 "	4 '	5 (	6 §	7 è	8 !	9 ç	Ø à	°)	— –	µ £	⌫
Unshifted	– 115	36	38	123	34	39	40	93	125	33	92	64	41	45	35	127
Shifted	– 121	42	49	50	51	52	53	54	55	56	57	48	91	95	96	– 34
Ctrl	– 127	36	38	27	34	39	40	29	29	33	28	0	41	45	35	– 35
Ctrl-Shifted	– 133	42	49	50	51	52	53	54	55	56	57	48	27	31	28	– 36

7	8	9	–
– 62	– 63	– 64	– 67
– 76	– 77	– 78	– 81
– 90	– 91	– 92	– 95
– 104	– 105	– 106	– 109

	Tab	) °	A	Z	E	R	T	Y	U	I	O	P	¨ ^	Esc	←
Unshifted	9	60	97	122	101	114	116	121	117	105	111	112	94	27	8
Shifted	– 46	62	65	90	69	82	84	89	85	73	79	80	126	– 37	– 40
Ctrl	– 47	60	1	26	5	18	20	25	21	9	15	16	30	– 38	– 41
Ctrl-Shifted	– 48	62	1	26	5	18	20	25	21	9	15	16	126	– 39	– 42

4	5	6	,
– 59	– 60	– 61	– 66
– 73	– 74	– 75	– 80
– 87	– 88	– 89	– 94
– 101	– 102	– 103	– 108

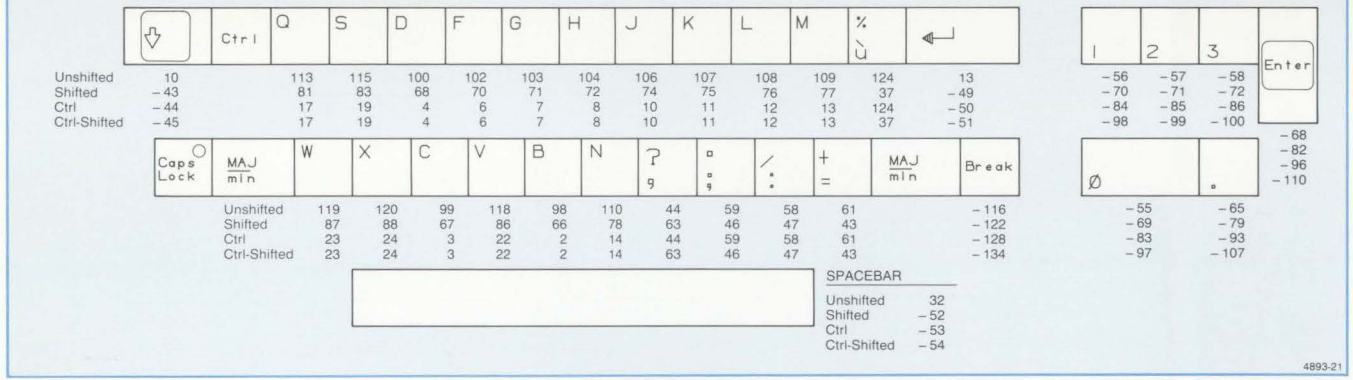
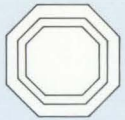


Figure 12. French Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras Dialog	Cancel Setup	D Copy S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn Sys Rq	Clear Cr Sel		! 1	" 2	§ 3	$ 4	% 5	+ 6	/ 7	(8	) 9	= 0	? '	" ^	←	Dup PA1	Field Mark PA2	7 PF13	8 PF14	9 PF15
Unshifted	-179	-180	-43	49	50	51	52	53	54	55	56	57	48	39	94	8	-199	-200	-62	-63	-64
Shifted	-184	-185	-44	33	34	93	36	37	43	47	40	41	61	63	126	-40	-206	-207	-76	-77	-78
Control	-189	-190	-45	49	50	51	52	53	54	55	56	57	48	39	30	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	-45	33	34	29	36	37	43	47	40	41	61	63	126	-42	-220	-221	-104	-105	-106

	D Eras S Eras	Esc Er Inp	→	A	Z	E	R	T	Y	U	I	O	P	¢ ¤	* &	← Del		–	4 PF16	5 PF17	6 PF18
Unshifted	-115	27	9	97	122	101	114	116	121	117	105	111	112	64	38	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	65	90	69	82	84	89	85	73	79	80	92	42	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	1	26	5	18	20	25	21	9	15	16	0	38	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	1	26	5	18	20	25	21	9	15	16	28	42	-36	-222	-109	-101	-102	-103

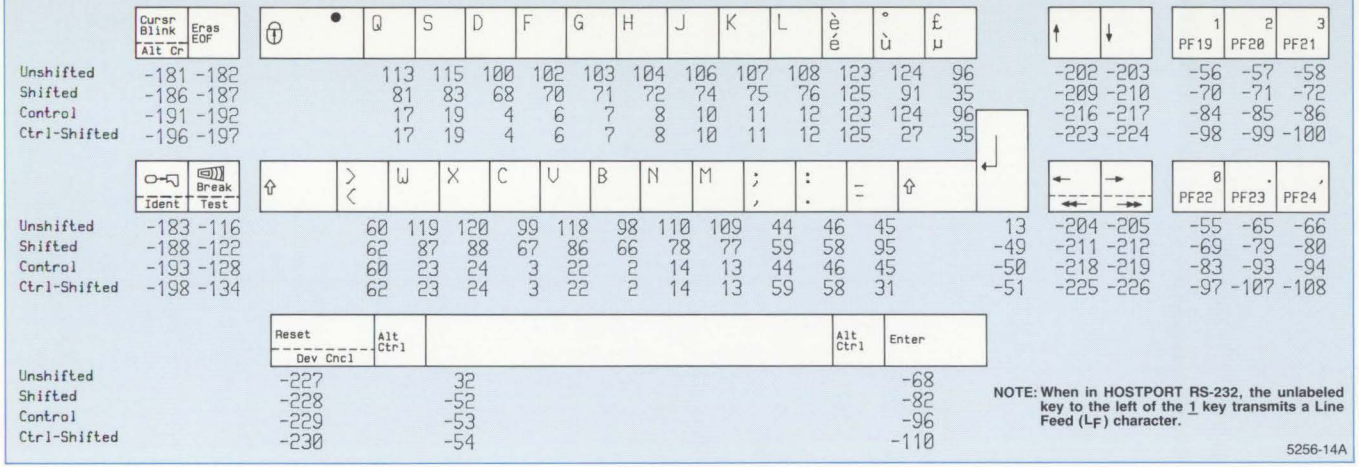
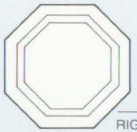


Figure 13. French Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.



JOYDISK

	RIGHT	UP	LEFT	DOWN
Unshifted	−135	−136	−137	−138
Shifted	−139	−140	−141	−142
Ctrl	−143	−144	−145	−146
Ctrl-Shifted	−147	−148	−149	−150

G Eras Dialog	Cancel Setup	D Copy S Copy	Menu
−111	−112	−113	−114
−117	−118	−119	−120
−123	−124	−125	−126
−129	−130	−131	−132

F1	F2	F3	F4
128	129	130	131
136	137	138	139
−2	−3	−4	−5
−10	−11	−12	−13

F5	F6	F7	F8
132	133	134	135
140	141	142	143
−6	−7	−8	−9
−14	−15	−16	−17

	D Eras S Eras	^ ~	! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	(8	) 9	= 0	? +	\ ´	> <	Rub Out
Unshifted	−115	126	49	50	51	52	53	54	55	56	57	48	43	39	60	127
Shifted	−121	94	33	34	35	36	37	38	47	40	41	61	63	96	62	−34
Ctrl	−127	126	49	50	51	52	53	54	55	56	57	48	43	39	60	−35
Ctrl-Shifted	−133	30	33	34	35	36	37	38	47	40	41	61	63	28	62	−36

	7	8	9	−
Unshifted	−62	−63	−64	−67
Shifted	−76	−77	−78	−81
Ctrl	−90	−91	−92	−95
Ctrl-Shifted	−104	−105	−106	−109

	Esc	* @	Q	W	E	R	T	Y	U	I	O	P	Å	Back Space	Line Feed
Unshifted	27	64	113	119	101	114	116	121	117	105	111	112	125	8	10
Shifted	−37	42	81	87	69	82	84	89	85	73	79	80	93	−40	−43
Ctrl	−38	0	17	23	5	18	20	25	21	9	15	16	29	−41	−44
Ctrl-Shifted	−39	42	17	23	5	18	20	25	21	9	15	16	29	−42	−45

	4	5	6	,
Unshifted	−59	−60	−61	−66
Shifted	−73	−74	−75	−80
Ctrl	−87	−88	−89	−94
Ctrl-Shifted	−101	−102	−103	−108

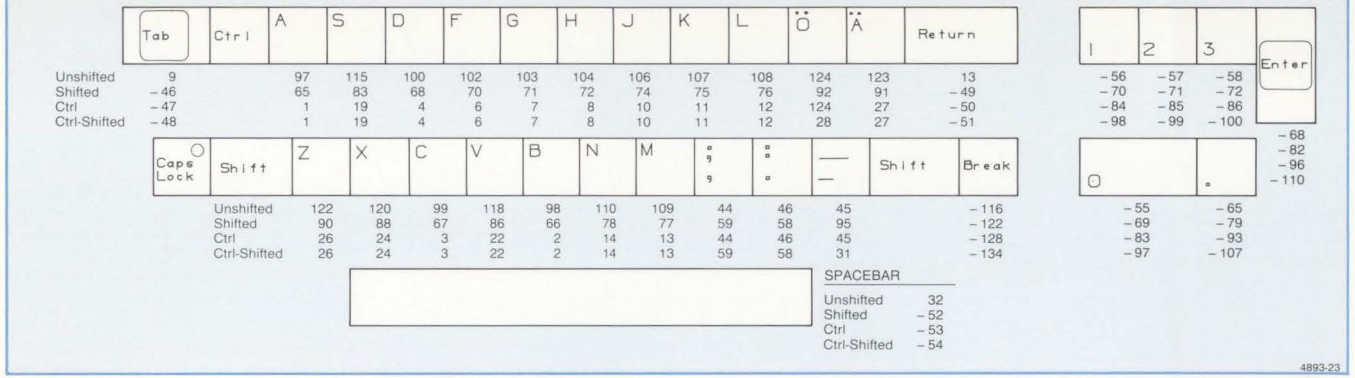
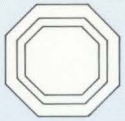


Figure 14. Swedish Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras Dialog	Cancel Setup	D Copy S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn Sys Rq	Clear Cr Sel		! 1	" 2	# 3	¤ 4	% 5	& 6	/ 7	(8	) 9	= 0	? +	` @	←	Dup PA1	Field Mark PA2	7 PF13	8 PF14	9 PF15
Unshifted	-179	-180	-43	49	50	51	52	53	54	55	56	57	48	43	64	8	-199	-200	-62	-63	-64
Shifted	-184	-185	-44	33	34	35	36	37	38	47	40	41	61	63	96	-40	-206	-207	-76	-77	-78
Control	-189	-190	-45	49	50	51	52	53	54	55	56	57	48	43	0	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	-45	33	34	35	36	37	38	47	40	41	61	63	96	-42	-220	-221	-104	-105	-106

	D Eras S Eras	Esc Er Inp	→	Q	W	E	R	T	Y	U	I	O	P	Å	^ ~	Del	↑	-	4 PF16	5 PF17	6 PF18
Unshifted	-115	27	9	113	119	101	114	116	121	117	105	111	112	125	126	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	81	87	69	82	84	89	85	73	79	80	93	94	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	17	23	5	18	20	25	21	9	15	16	29	126	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	17	23	5	18	20	25	21	9	15	16	29	30	-36	-222	-109	-101	-102	-103

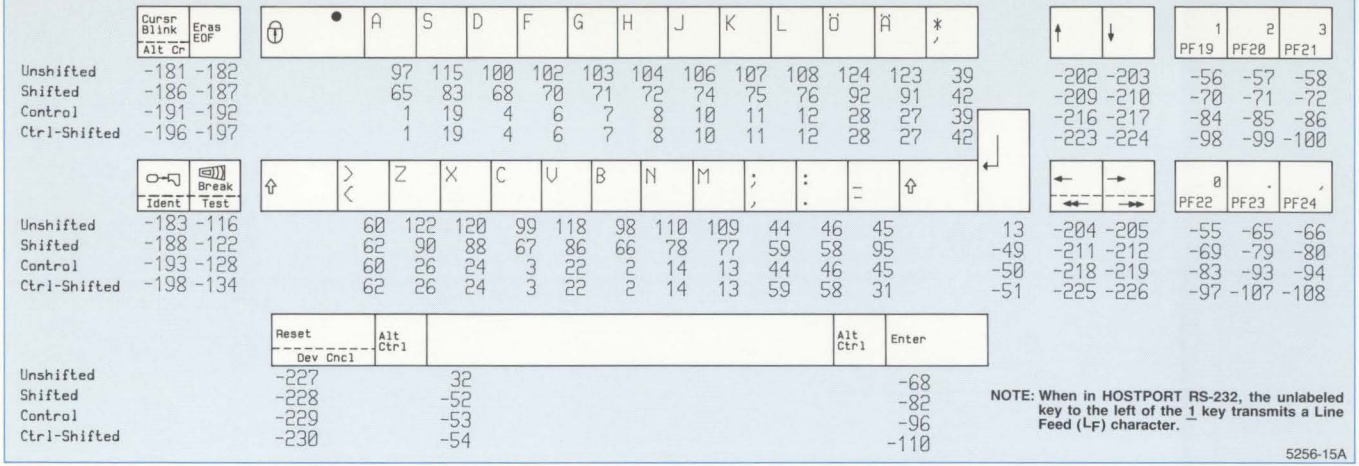
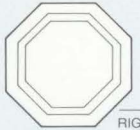


Figure 15. Swedish Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.



	JOYDISK RIGHT	UP	LEFT	DOWN	G Eras Dialog	Cancel Setup	D Copy S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Ctrl	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	D Eras S Eras	^ —	! 1	" 2	# 3	$ 4	% 5	& 6	/ 7	(8	) 9	= ⊙	? +	\ /	> <	Rub Out	7	8	9	-
Unshifted	-115	126	49	50	51	52	53	54	55	56	57	48	43	39	60	127	-62	-63	-64	-67
Shifted	-121	94	33	34	35	36	37	38	47	40	41	61	63	96	62	-34	-76	-77	-78	-81
Ctrl	-127	126	49	50	51	52	53	54	55	56	57	48	43	39	60	-35	-90	-91	-92	-95
Ctrl-Shifted	-133	30	33	34	35	36	37	38	47	40	41	61	63	28	62	-36	-104	-105	-106	-109

	Esc	* @	Q	W	E	R	T	Y	U	I	O	P	A	Back Space	Line Feed	4	5	6	,
Unshifted	27	64	113	119	101	114	116	121	117	105	111	112	125	8	10	-59	-60	-61	-66
Shifted	-37	42	81	87	69	82	84	89	85	73	79	80	93	-40	-43	-73	-74	-75	-80
Ctrl	-38	0	17	23	5	18	20	25	21	9	15	16	29	-41	-44	-87	-88	-89	-94
Ctrl-Shifted	-39	42	17	23	5	18	20	25	21	9	15	16	29	-42	-45	-101	-102	-103	-108

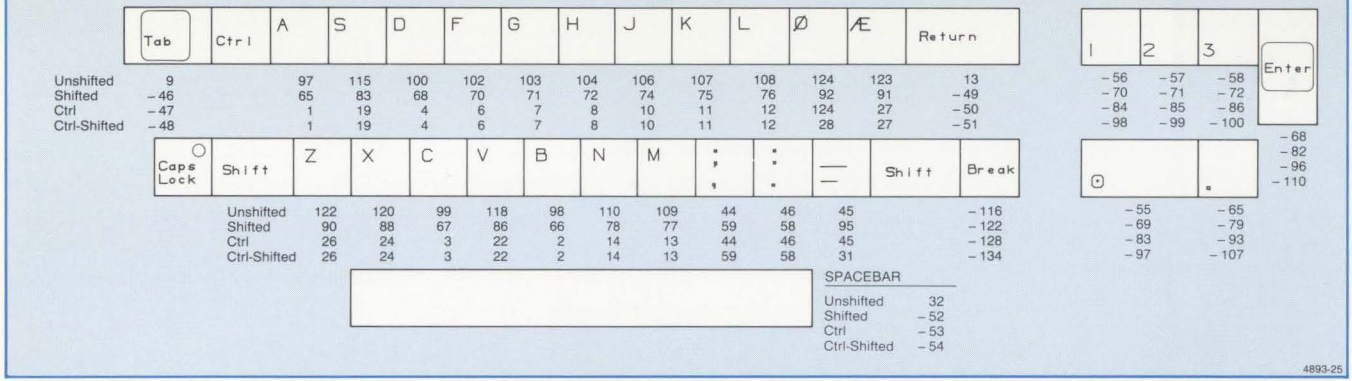
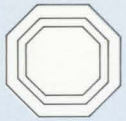


Figure 16. Danish/Norwegian Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn / Sys Rq	Clear / Cr Sel		! / 1	" / 2	# / 3	$ / 4	% / 5	& / 6	/ / 7	(/ 8	) / 9	= / 0	? / +	\ / @	←	Dup / PA1	Field Mark / PA2	7 / PF13	8 / PF14	9 / PF15
Unshifted	-179	-180	-43	49	50	51	52	53	54	55	56	57	48	43	64	8	-199	-200	-62	-63	-64
Shifted	-184	-185	-44	33	34	35	36	37	38	47	40	41	61	63	96	-40	-206	-207	-76	-77	-78
Control	-189	-190	-45	49	50	51	52	53	54	55	56	57	48	43	0	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	-45	33	34	35	36	37	38	47	40	41	61	63	96	-42	-220	-221	-104	-105	-106

	D Eras / S Eras	Esc / Er Inp	→	Q	W	E	R	T	Y	U	I	O	P	Å	^ / ~	Del	←	→	4 / PF16	5 / PF17	6 / PF18
Unshifted	-115	27	9	113	119	101	114	116	121	117	105	111	112	125	126	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	81	87	69	82	84	89	85	73	79	80	93	94	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	17	23	5	18	20	25	21	9	15	16	29	126	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	17	23	5	18	20	25	21	9	15	16	29	30	-36	-222	-109	-101	-102	-103

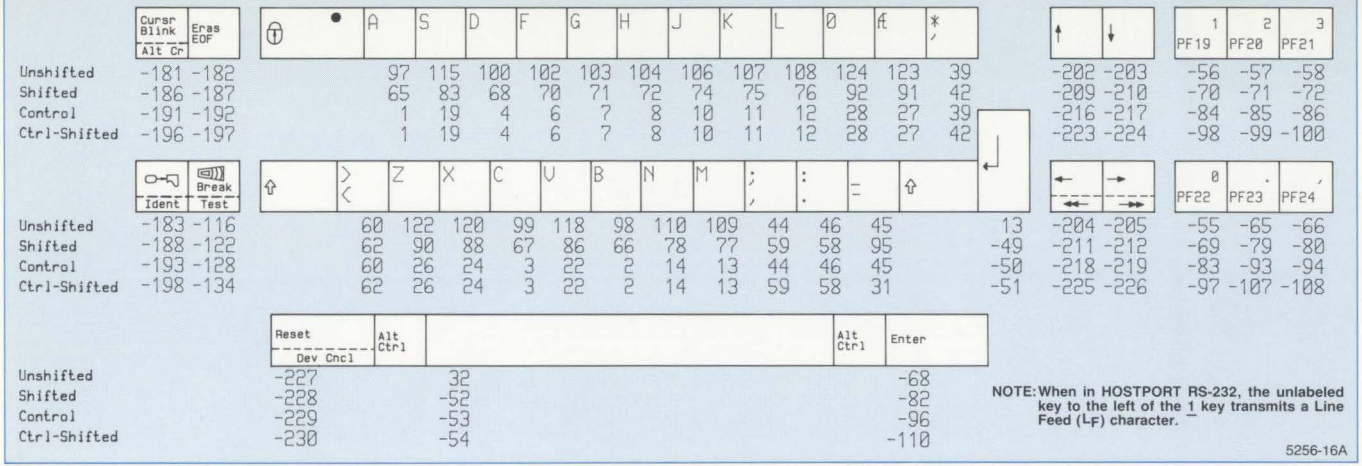
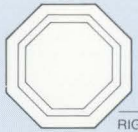


Figure 17. Danish/Norwegian Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.



JOYDISK

	RIGHT	UP	LEFT	DOWN
Unshifted	– 135	– 136	– 137	– 138
Shifted	– 139	– 140	– 141	– 142
Ctrl	– 143	– 144	– 145	– 146
Ctrl-Shifted	– 147	– 148	– 149	– 150

G Lö / Dialog	Stop / Param	D Kop / B Kop	Menü
– 111	– 112	– 113	– 114
– 117	– 118	– 119	– 120
– 123	– 124	– 125	– 126
– 129	– 130	– 131	– 132

F	F1	F2	F3	F4
	128	129	130	131
	136	137	138	139
	– 2	– 3	– 4	– 5
	– 10	– 11	– 12	– 13

F5	F6	F7	F8
132	133	134	135
140	141	142	143
– 6	– 7	– 8	– 9
– 14	– 15	– 16	– 17

	D Lö / B Lö	^ / #	! / 1	" / 2	§ / 3	$ / 4	% / 5	& / 6	/ / 7	(/ 8	) / 9	= / Ø	? / ß	\ / /	* / +	⌫
Unshifted	– 115	35	49	50	51	52	53	54	55	56	57	48	126	39	43	127
Shifted	– 121	94	33	34	64	36	37	38	47	40	41	61	63	96	42	– 34
Ctrl	– 127	35	49	50	51	52	53	54	55	56	57	48	126	39	43	– 35
Ctrl-Shifted	– 133	30	33	34	0	36	37	38	47	40	41	61	63	28	42	– 36

	Esc	> / <	Q	W	E	R	T	Z	U	I	O	P	Ü	←	↓
Unshifted	27	60	113	119	101	114	116	122	117	105	111	112	125	8	10
Shifted	– 37	62	81	87	69	82	84	90	85	73	79	80	93	– 40	– 43
Ctrl	– 38	60	17	23	5	18	20	26	21	9	15	16	29	– 41	– 44
Ctrl-Shifted	– 39	62	17	23	5	18	20	26	21	9	15	16	29	– 42	– 45

7	8	9	–
– 62	– 63	– 64	– 67
– 76	– 77	– 78	– 81
– 90	– 91	– 92	– 95
– 104	– 105	– 106	– 109

4	5	6	,
– 59	– 60	– 61	– 66
– 73	– 74	– 75	– 80
– 87	– 88	– 89	– 94
– 101	– 102	– 103	– 108

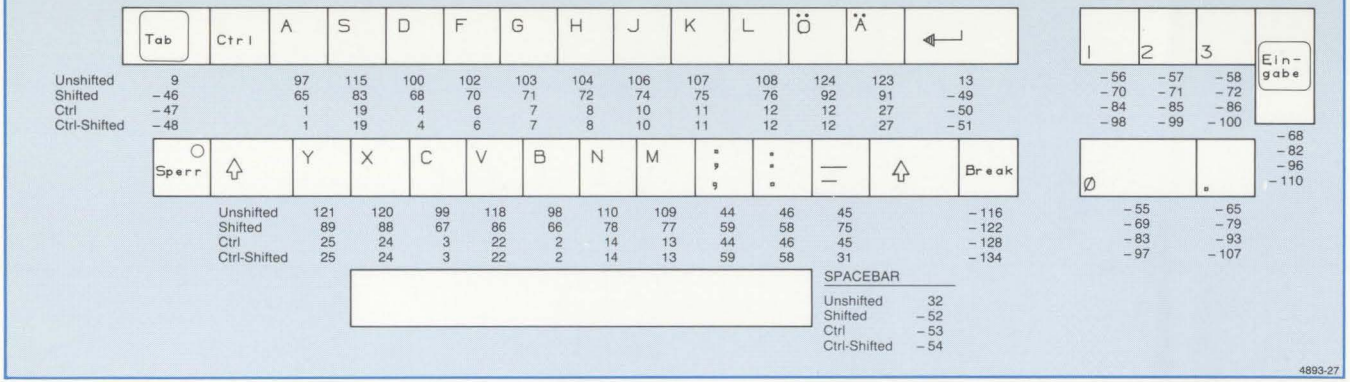
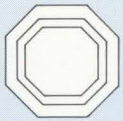


Figure 18. German Keyboard Layout and Key Macro Chart for 4100 Series Terminals.



	Right	Up	Left	Down	G Eras / Dialog	Cancel / Setup	D Copy / S Copy	Menu	F1	F2	F3	F4	F5	F6	F7	F8
Unshifted	-135	-136	-137	-138	-111	-112	-113	-114	128	129	130	131	132	133	134	135
Shifted	-139	-140	-141	-142	-117	-118	-119	-120	136	137	138	139	140	141	142	143
Control	-143	-144	-145	-146	-123	-124	-125	-126	-2	-3	-4	-5	-6	-7	-8	-9
Ctrl-Shifted	-147	-148	-149	-150	-129	-130	-131	-132	-10	-11	-12	-13	-14	-15	-16	-17

	Attn / Sys Rq	Clear / Cr Sel		! 1	" 2	§ 3	$ 4	% 5	& 6	/ 7	(8	) 9	= 0	? ß	` ´	←	Dup / PA1	Field Mark / PA2	7 / PF13	8 / PF14	9 / PF15
Unshifted	-179	-180	-43	49	50	51	52	53	54	55	56	57	48	126	39	8	-199	-200	-62	-63	-64
Shifted	-184	-185	-44	33	34	64	36	37	38	47	40	41	61	63	96	-40	-206	-207	-76	-77	-78
Control	-189	-190	-45	49	50	51	52	53	54	55	56	57	48	126	39	-41	-213	-214	-90	-91	-92
Ctrl-Shifted	-194	-195	-45	33	34	0	36	37	38	47	40	41	61	63	96	-42	-220	-221	-104	-105	-106

	D Eras / S Eras	Esc / Er Inp	→	Q	W	E	R	T	Z	U	I	O	P	ü	* +	← Del	⌫	⌦ –	4 / PF16	5 / PF17	6 / PF18
Unshifted	-115	27	9	113	119	101	114	116	122	117	105	111	112	125	43	127	-201	-67	-59	-60	-61
Shifted	-121	-37	-46	81	87	69	82	84	90	85	73	79	80	93	42	-34	-208	-81	-73	-74	-75
Control	-127	-38	-47	17	23	5	18	20	26	21	9	15	16	29	43	-35	-215	-95	-87	-88	-89
Ctrl-Shifted	-133	-39	-48	17	23	5	18	20	26	21	9	15	16	29	42	-36	-222	-109	-101	-102	-103

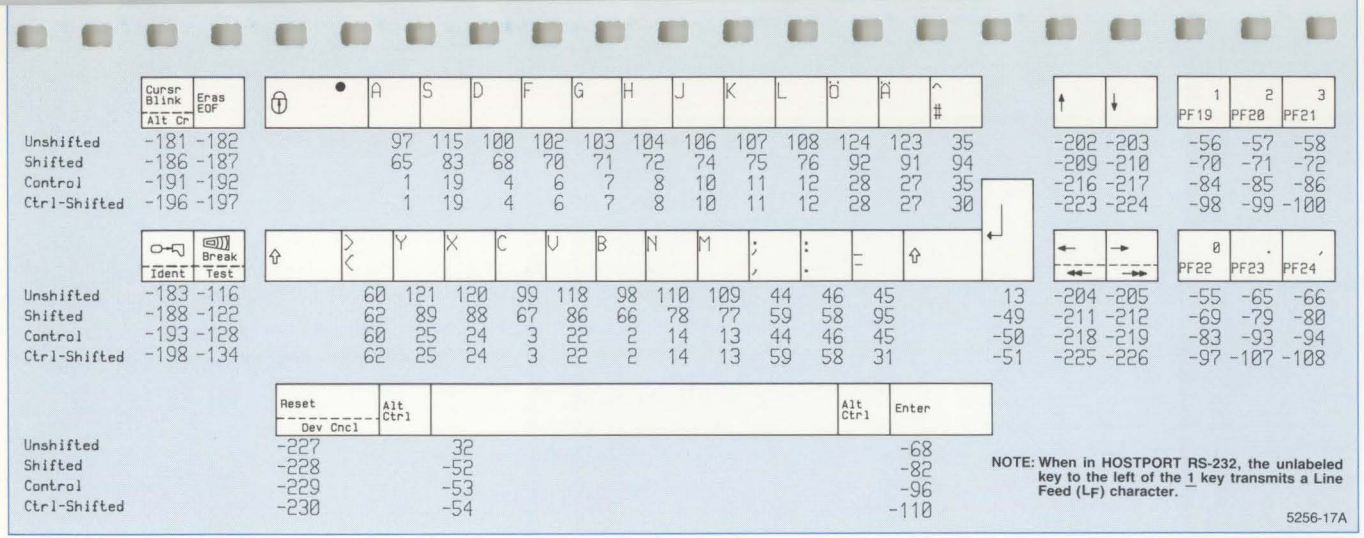


Figure 19. German Keyboard Layout and Key Macro Chart for CX4100 Series Terminals.

B7 B6 B5 / BITS B4 B3 B2 B1	Ø Ø Ø	Ø Ø 1	Ø 1 Ø	Ø 1 1	1 Ø Ø	1 Ø 1	1 1 Ø	1 1 1
	CONTROL		FIGURES		UPPERCASE		LOWERCASE	
Ø Ø Ø Ø	NU 0	DL 16	SP 32	0 48	— 64	Ñ 80	◆ 96	112
Ø Ø Ø 1	SH 1	D1 17	Ä 33	1 49	¢ 65	ñ 81	■ 97	113
Ø Ø 1 Ø	SX 2	D2 18	ä 34	2 50	¦ 66	¿ 82	HT 98	114
Ø Ø 1 1	EX 3	D3 19	Å 35	3 51	† 67	¡ 83	FF 99	115
Ø 1 Ø Ø	ET 4	D4 20	å 36	4 52	□ 68	α 84	CR 100	116
Ø 1 Ø 1	EQ 5	NK 21	Æ 37	5 53	■ 69	σ 85	LF 101	117
Ø 1 1 Ø	AK 6	SY 22	æ 38	6 54	● 70	τ 86	° 102	118
Ø 1 1 1	BL 7	EB 23	à 39	7 55	Δ 71	ρ 87	± 103	119
1 Ø Ø Ø	BS 8	CN 24	ç 40	8 56	δ 72	μ 88	NL 104	120
1 Ø Ø 1	HT 9	EM 25	é 41	9 57	λ 73	Σ 89	VT 105	⩽ 121
1 Ø 1 Ø	LF 10	SB 26	è 42	ù 58	¬ 74	Ω 90	┘ 106	⩾ 122
1 Ø 1 1	VT 11	EC 27	Ö 43	ß 59	└ 75	∫ 91	┐ 107	π 123
1 1 Ø Ø	FF 12	FS 28	ö 44	<Θ 60	┌ 76	92	└ 108	≠ 124
1 1 Ø 1	CR 13	GS 29	ϕ 45	¤ 61	┘ 77	÷ 93	┴ 109	£ 125
1 1 1 Ø	SO 14	RS 30	Ü 46	§ 62	¬ 78	≈ 94	┼ 110	• 126
1 1 1 1	SI 15	US 31	ü 47	•• 63	∞ 79	┌ 95	111	DT 127

(4526)4893-29B

Figure 20. Supplementary Character Set Code Chart.

RULINGS CHARACTER SET

B7 B6 B5 / BITS B4 B3 B2 B1	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
	CONTROL		FIGURES		UPPERCASE		LOWERCASE	
0 0 0 0	NU 0	DL 16	SP 32	0 48	@ 64	P 80	◆ 96	112
0 0 0 1	SH 1	D1 17	! 33	1 49	A 65	Q 81	■ 97	113
0 0 1 0	SX 2	D2 18	" 34	2 50	B 66	R 82	HT 98	114
0 0 1 1	EX 3	D3 19	# 35	3 51	C 67	S 83	FF 99	115
0 1 0 0	ET 4	D4 20	$ 36	4 52	D 68	T 84	CR 100	116
0 1 0 1	EQ 5	NK 21	% 37	5 53	E 69	U 85	LF 101	117
0 1 1 0	AK 6	SY 22	& 38	6 54	F 70	V 86	° 102	118
0 1 1 1	BL 7	EB 23	' 39	7 55	G 71	W 87	± 103	119
1 0 0 0	BS 8	CN 24	(40	8 56	H 72	X 88	NL 104	120
1 0 0 1	HT 9	EM 25	) 41	9 57	I 73	Y 89	VT 105	≤ 121
1 0 1 0	LF 10	SB 26	* 42	: 58	J 74	Z 90	106	≥ 122
1 0 1 1	VT 11	EC 27	+ 43	; 59	K 75	[91	107	π 123
1 1 0 0	FF 12	FS 28	, 44	< 60	L 76	\ 92	108	≠ 124
1 1 0 1	CR 13	GS 29	- 45	= 61	M 77	] 93	109	£ 125
1 1 1 0	SO 14	RS 30	. 46	> 62	N 78	^ 94	110	· 126
1 1 1 1	SI 15	US 31	/ 47	? 63	O 79	95	111	DT 127

(4526)4893-30

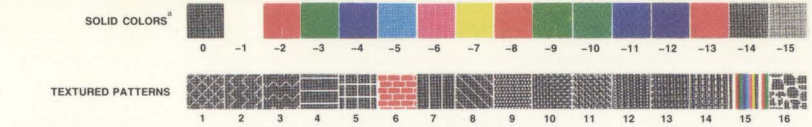
Figure 21. Rullings Character Set Code Chart.

ASCII CODE CHART

BITS B7 B6 B5 / B4 B3 B2 B1	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
	CONTROL		FIGURES		UPPERCASE		LOWERCASE	
0 0 0 0	NU 0	DL 16	SP 32	0 48	@ 64	P 80	\ 96	p 112
0 0 0 1	SH 1	D1 17	! 33	1 49	A 65	Q 81	a 97	q 113
0 0 1 0	SX 2	D2 18	" 34	2 50	B 66	R 82	b 98	r 114
0 0 1 1	EX 3	D3 19	# 35	3 51	C 67	S 83	c 99	s 115
0 1 0 0	ET 4	D4 20	$ 36	4 52	D 68	T 84	d 100	t 116
0 1 0 1	EQ 5	NK 21	% 37	5 53	E 69	U 85	e 101	u 117
0 1 1 0	AK 6	SY 22	& 38	6 54	F 70	V 86	f 102	v 118
0 1 1 1	BL 7	EB 23	' 39	7 55	G 71	W 87	g 103	w 119
1 0 0 0	BS 8	CN 24	(40	8 56	H 72	X 88	h 104	x 120
1 0 0 1	HT 9	EM 25	) 41	9 57	I 73	Y 89	i 105	y 121
1 0 1 0	LF 10	SB 26	* 42	: 58	J 74	Z 90	j 106	z 122
1 0 1 1	VT 11	EC 27	+ 43	; 59	K 75	[91	k 107	{ 123
1 1 0 0	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124
1 1 0 1	CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125
1 1 1 0	SO 14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126
1 1 1 1	SI 15	US 31	/ 47	? 63	O 79	_ 95	o 111	DT 127

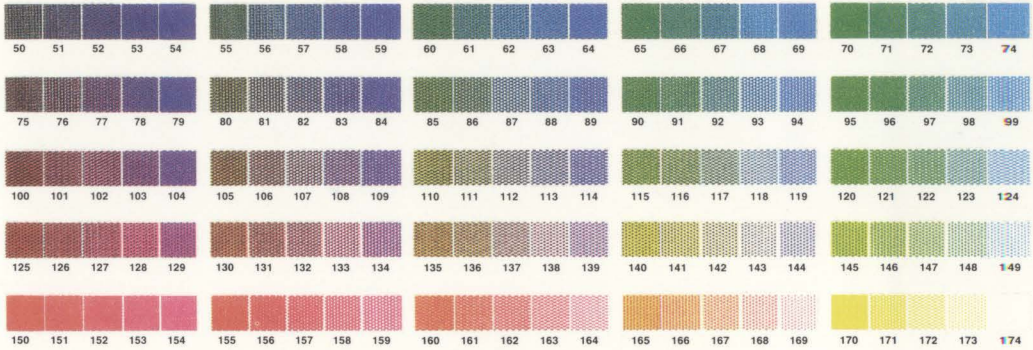
(4526)4893-18

Figure 22. ASCII/North American Character Set Code Chart.



NOTE: These patterns were produced on a 4695 Color Graphics Copier by pressing Ctrl-SCopy on the terminal. Pressing just SCopy will reverse black and white, and change some of the patterns accordingly.

DITHERED PATTERNS



[a] Each solid color pattern displays a color index (that is, Pattern -3 displays Index 3).

4981-33B

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