TEK REFERENCE GUIDE

4200 SERIES

COMPUTER DISPLAY TERMINALS

Tektronix®
COMMITTED TO EXCELLENCE

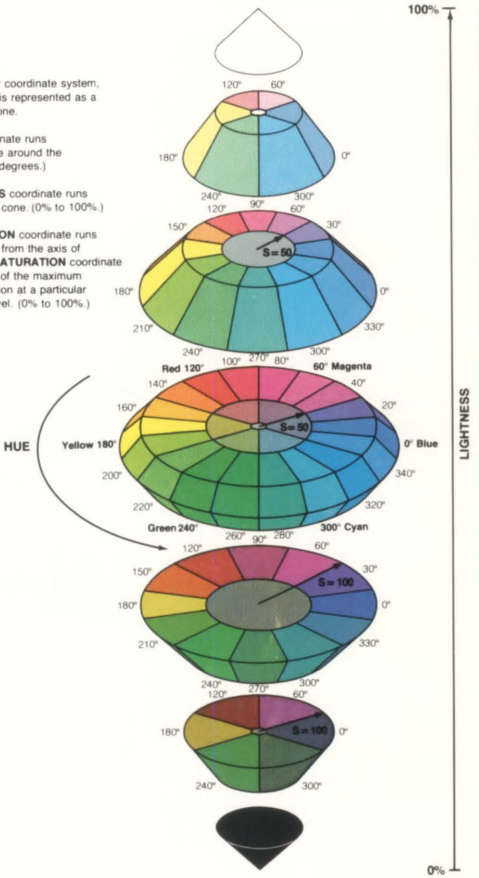
TEKTRONIX COLOR STANDARD

In the **HLS** color coordinate system, the color space is represented as a double-ended cone.

The **HUE** coordinate runs counterclockwise around the cone. (0 to 360 degrees.)

The **LIGHTNESS** coordinate runs vertically up the cone. (0% to 100%.)

The **SATURATION** coordinate runs radially outward from the axis of the cone. The **SATURATION** coordinate is a percentage of the maximum possible saturation at a particular **LIGHTNESS** level. (0% to 100%.)



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INTRODUCTION

This Reference Guide covers commands available on the Tektronix 4200 Series Computer Display Terminals.

WHAT IS IN THIS REFERENCE GUIDE

Information you'll find in this guide includes:

- *Cross-Reference Lists* — Lists that cross-reference all the commands available for this terminal:
  - Separate lists of commands grouped by function for each command set (ANSI, VT52, and TEK)
  - A list of commands by opcode
  - A list of commands by Setup name
  - A list of the commands that can be saved in nonvolatile memory
  - A list of the commands that are saved in a terminal environment (by issuing the Tek-style SAVE command)
- *Command Summaries* — Separate listings of each command set, in which each command is listed alphabetically. These brief command descriptions give the command's syntax, parameters, and defaults as well as any constraints associated with that command.
- *Report Summaries* — A brief description of each terminal report that can be invoked with Tek-style commands.
- *Keyboard Layouts* — Illustrations that show key positions and macro numbers for each key on all keyboards available with the terminal (including the optional mouse).
- *Code Charts* — Code charts for:
  - The Supplementary character set
  - The Rulings character set
  - The Multilingual (ASCII) character set
  - The North American (ASCII) character set
  - The EBCDIC character codes (for coax keyboards)
- *Color Specifications* — Illustrations of the HLS color cone (inside front cover) and the terminal's predefined fill patterns (inside back cover).

INFORMATION 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 to 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.

INFORMATION 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 (see *Finding More Information*).

Toward the end of this guide, you'll find some tools of particular interest to programmers:

- A section on the reports the terminal can send to your host program
- Charts showing the macro numbers available on each keyboard (including the optional mouse)
- ASCII and EBCDIC code charts for the more commonly used character sets

If you use the SAVE command to save a terminal environment, you may want to look over the cross-reference list titled *Commands Saved in an Environment* (the last of the cross-reference lists at the beginning of this guide).

FINDING MORE INFORMATION

For more information about the capabilities of this terminal (including detailed discussion of the commands described in this guide), see the *4200 Series Programmers Manual* (part number 070-6048-01). You can order this manual through your local Tektronix Field Office.

ANSI COMMANDS BY FUNCTION

Command Name	Opcode[a]	Setup Name[b]

MOVING THE CURSOR

BS (BACK SPACE)	$^{B}_{S}$	
CR (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	
FF (FORM FEED)	$^{F}_{F}$	
HT (HORIZONTAL TAB)	$^{H}_{T}$	
HVP (HORIZONTAL AND VERTICAL POSITION)	$^{E}_{C}$[. . . f	
IND (INDEX)	$^{E}_{C}$D	
LF (LINE FEED)	$^{L}_{F}$	
NEL (NEXT LINE)	$^{E}_{C}$E	
RI (REVERSE INDEX)	$^{E}_{C}$M	
VT (VERTICAL TAB)	$^{V}_{T}$	

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	

[a] Some commands in this list require parameters; three dots (. . .) show where the parameter values 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]
CREATING TABULAR MATERIAL		
CBT (CURSOR BACKWARD TAB)	ESC[. . . Z	
CHT (CURSOR HORIZONTAL TAB)	ESC[. . . I	
HT (HORIZONTAL TAB)	HT	
HTS (HORIZONTAL TAB SET)	ESCH	
TBC (TAB CLEAR)	ESC[. . . g	
VT (VERTICAL TAB)	VT	
SCROLLING THE DIALOG AREA		
SD (SCROLL DOWN)	ESC[. . . T	
SL (SCROLL LEFT)	ESC[. . . SP@	
SR (SCROLL RIGHT)	ESC[. . . SPA	
SU (SCROLL UP)	ESC[. . . S	
MAKING COPIES		
FF (FORM FEED)	FF	
MC (MEDIA COPY)	ESC[. . . i	**AUTOPRINT . . .**
SELECTING HOST COMMAND MODE		
ANSI-TO-VT52 MODE (RM command)	ESC[?2l	**CODE VT52**
SELECT CODE	ESC%! . . .	**CODE . . .**
SYNTAX MODE	ESC#! . . .	
CANCELING ANSI COMMANDS		
CAN (CANCEL)	CN	
SUB (SUBSTITUTE)	SB	
REPORTING TO THE HOST		
CPR (CURSOR POSITION REPORT)	ESC[. . . R	
DSR (DEVICE STATUS REPORT)	ESC[. . . n	
DA (DEVICE ATTRIBUTES)	ESC[0c	
ENQ (ENQUIRY)	ENQ	
SYNTAX MODE	ESC#! . . .	
TEKID (IDENTIFY TERMINAL)	ESCZ	

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ANSI COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[b]
SELECTING CHARACTER SETS		
SCS (SELECT CHARACTER SET)		
G0 (94 characters)	^[c(...	DLSELECT G0...
G1 (94 characters)	^[c)...	DLSELECT G1...
G1 (96 characters)	^[c-...	DLSELECT G1...96
SI (SHIFT IN)	^O	
SO (SHIFT OUT)	^N	
TEKDCM (DOWNLOAD CHARACTER MODE)		
(RM command)	^[c[<2l	DLCHARSET NO
(SM command)	^[c[<2h	DLCHARSET YES
TEKDCS (DOWNLOAD CHARACTER SET)	^[cP...	
CONTROLLING THE KEYBOARD		
BEL (BELL)	^G	
DMI (DISABLE MANUAL INPUT)	^[c`	
EMI (ENABLE MANUAL INPUT)	^[cb	
KAM (KEYBOARD ACTION MODE)		
(RM command)	^[c[2l	
(SM command)	^[c[2h	
TEKCKM (CURSOR KEYS MODE)		
(RM command)	^[c[?1l	CURSORKEY NO
(SM command)	^[c[?1h	CURSORKEY YES
TEKKPAM (KEYPAD APPLICATION MODE)	^[c=	KEYPAD APPLICATION
TEKKPNM (KEYPAD NUMERIC MODE)	^[c>	KEYPAD NUMERIC
SAVING AND RESTORING TERMINAL SETTINGS		
RIS (RESET TO INITIAL STATE)	^[cc	
SYNTAX MODE	^[c#!...	
TEKRC (RESTORE CURSOR)	^[c8	
TEKSC (SAVE CURSOR)	^[c7	

[a] Some commands in this list require parameters; three dots (...) show where the parameter values 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]
CONTROLLING THE DIALOG AREA DISPLAY		
IRM (INSERT/ REPLACE MODE)		
(RM command)	E[4l	**INSERTREP REPLACE**
(SM command)	E[4h	**INSERTREP INSERT**
LNM (LINEFEED/NEWLINE MODE)		
(RM command)	E[20l	**LFCR NO**
(SM command)	E[20h	**LFCR YES**
SGR (SELECT GRAPHICS RENDITION)	E[. . . m	**TEXTRENDITION . . .**
SRM (SEND/RECEIVE MODE)		
(RM command)	E[12l	**ECHO YES**
(SM command)	E[12h	**ECHO NO**
TEKARM AUTOREPEAT MODE)		
(RM command)	E[?8l	**AUTOREPEAT NO**
(SM command)	E[?8h	**AUTOREPEAT YES**
TEKAWM (AUTOWRAP MODE)		
(RM command)	E[?7l	**AUTOWRAP NO**
(SM command)	E[?7h	**AUTOWRAP YES**
TEKCOLM (COLUMN MODE)		
(RM command)	E[?3l	**COLUMN 80**
(SM command)	E[?3h	**COLUMN 132**
TEKDHL (DOUBLE HEIGHT LINE)		
TOP HALF	E#3	
BOTTOM HALF	E#4	
TEKDWL (DOUBLE WIDTH LINE)	E#6	
TEKOM (ORIGIN MODE)		
(RM command)	E[?6l	**ORIGIN ABSOLUTE**
(SM command)	E[?6h	**ORIGIN RELATIVE**
TEKORM (OVERSTRIKE/REPLACE MODE)		
(RM command)	E[<1l	**DAMODE REPLACE**
(SM command)	E[<1h	**DAMODE OVERSTRIKE**
TEKSCNM (SCREEN MODE)		
(RM command)	E[?5l	**SCREEN NORMAL**
(SM command)	E[?5h	**SCREEN REVERSE**
TEKSTBM (SET TOP AND BOTTOM MARGINS)	E[. . . r	**EDITMARGINS . . .**
TEKSWL (SINGLE WIDTH LINE)	E#5	

[a] Some commands in this list require parameters; three dots (. . .) show where the parameter values 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	
SELECTING HOST COMMAND MODE		
ENTER ANSI MODE	ESC <	CODE ANSI
SELECT CODE	ESC % ! . . .	CODE . . .
SYNTAX MODE	ESC # ! . . .	
SELECTING VT52 SUBMODES		
ENTER ALTERNATE KEYPAD MODE	ESC =	KEYPAD APPLICATION
ENTER GRAPHICS MODE	ESC F	
EXIT ALTERNATE KEYPAD MODE	ESC >	KEYPAD NUMERIC
EXIT GRAPHICS MODE	ESC G	
REPORTING TO THE HOST		
ENQUIRY	ESC Q	
IDENTIFY	ESC Z	
SYNTAX MODE	ESC # ! . . .	

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

TEK-STYLE COMMANDS BY FUNCTION

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

- Coax Commands
- Color
  - Controlling Graphics Area Color
  - Controlling Dialog Area Color
- Command Settings
  - Cancelling Commands
  - Reporting Settings
  - Restoring Settings
  - Saving Settings
  - Encoding and Decoding Parameters
- Communications: Host Port
  - Switching Between Host Ports
  - Establishing RS-232 Communications
  - Controlling RS-232 Communications
  - Establishing Coax Communications
- Communications: Peripheral Ports
  - Establishing COPIER Port Communications
  - Establishing 2PPI Port Communications
  - Transferring Data Between Ports
- Copies
  - Initiating Copies
  - Enabling Background Copying
  - Setting Dialog Copy Attributes
  - Setting Color Copy Attributes: 2PPI Ports
  - Setting Color Copy Attributes: COPIER Port
  - Setting Monochrome Copy Attributes
- Dialog Area
- GIN (Graphics Input)
  - Enabling and Disabling GIN
  - Setting GIN Display Characteristics
  - Controlling GIN Reports
- Graphics Primitives
  - Alphatext
  - Curves
  - Graphtext
  - Lines
  - Markers
  - Panels
- Help
- Keyboard
- Lines
- Macros

(continued)

TEK-STYLE COMMANDS BY FUNCTION (cont)

- Modes
  - Selecting Host Command Modes
  - Selecting Implicit Command Modes
- Pixel Operations
  - Initializing Pixel Operations
  - Writing Pixels
- Reports
  - Requesting Reports
  - Controlling Reports
- Screen Dimming
- Security
- Segments
  - Defining Segments
  - Saving Segment Definitions
  - Displaying Segments
  - Transforming Segments
  - Setting Segment Attributes
  - Assigning Segment Classes
  - Editing Segments
  - Reporting Segment Attributes to the Host
- Surfaces
- Views
  - Controlling Multiple Views
  - Using Zoom and Pan

Command Name	Opcode[a]	Setup Name[a,b]
COAX COMMANDS		
BASE COLOR	(none)	**BAS**ECOLOR
CAPITALS	(none)	**CAP**ITALS
CX KEYPAD	(none)	**CX**KEYPAD
HOST PORT	(none)	**HO**STPORT
TEK HEADER CHARACTER	E**cOI**	**TEK**HEADER
TRANSLATION METHOD	(none)	**TM**ETHOD
COLOR		
Controlling Graphics Area Color		
SELECT FILL PATTERN	E**cMP**	**FIL**LPATTERN
SET BACKGROUND COLOR	E**cTB**	**CB**ACKGROUND
SET BACKGROUND INDICES	E**cMB**	**BA**CKINDEX
SET COLOR MODE	E**cTM**	**CMO**DE
SET GIN CURSOR COLOR	E**cTC**	**GC**URSOR
SET LINE INDEX	E**cML**	**LINE**INDEX
SET SURFACE COLOR MAP	E**cTG**	**CMA**P
SET TEXT INDEX	E**cMT**	**GTI**NDEX
SET VIEW ATTRIBUTES	E**cRA**	**VA**TTRIBUTES
Controlling Dialog Area Color		
BASE COLOR[c]	(none)	**BAS**ECOLOR
SET ALPHA CURSOR INDICES	E**cTD**	**AC**URSOR
SET DIALOG AREA COLOR MAP	E**cTF**	**DAC**MAP
SET DIALOG AREA INDEX	E**cLI**	**DAI**NDEX
COMMAND SETTINGS		
Cancelling Commands		
CANCEL	E**cKC**	(none)
Reporting Settings		
REPORT TERMINAL SETTINGS	E**cIQ**	(none)
STATUS	(none)	**STA**TUS
SYNTAX MODE	E**c#!**	(none)
Saving and Restoring Settings		
FACTORY	(none)	**FA**CTORY
LOAD	E**cJL**	**LOA**D
RESET	E**cKV**	**RES**ET
SAVE	E**cJV**	**SA**VE
SAVE NONVOLATILE PARAMETERS	E**cKU**	**NV**SAVE
SYNTAX MODE	E**c#!**	(none)
Troubleshooting		
DECODE	(none)	**DE**CODE
ENCODE	(none)	**EN**CODE
HELP	(none)	**HE**LP
LOCAL	(none)	**LOCA**L
SET SNOOPY MODE	E**cKS**	**SN**OOPY
STATUS	(none)	**STA**TUS

[a] In Tek-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] This command is available only on terminals equipped with the coax option.

TEK-STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
COMMUNICATIONS: HOST PORT		
Switching Between Host Ports		
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**	**Q**UEUESIZE
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}c^{C}$_{N}$	(none)
PROMPT MODE	^{E}c**NM**	**PROMPTM**ODE
Establishing Coax Communications (Requires Coax Option)		
HOST PORT[c]	(none)	**HO**STPORT
SET ERROR THRESHOLD	^{E}c**KT**	**ER**RORLEVEL
TEK HEADER CHARACTER[c]	^{E}c**OI**	**TEK**HEADER
TRANSLATION METHOD[c]	(none)	**TM**ETHOD

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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] This command is available only on terminals equipped with the coax option.

Command Name	Opcode[a]	Setup Name[a,b]
COMMUNICATIONS: PERIPHERAL PORTS		
Establishing COPIER Port Communications		
SELECT HARDCOPY INTERFACE	^{E}cQD	**HCI**NTERFACE
SET HARDCOPY MONOCHROME ATTRIBUTES	^{E}cQE	**HCMO**NOCHROME
Establishing 2PPI Port Communications		
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**	**PBI**TS
Transferring Data Between Ports		
COPY	^{E}c**JC**	**COP**Y
PORT COPY	^{E}c**PC**	**PCOPY**

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

TEK-STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[b]
COPIES		
Initiating Copies		
COPY	$^{E}_{C}$JC	**COP**Y
HARDCOPY	$^{E}_{C}$KH	(none)
PLOT	$^{E}_{C}$PL	**PL**OT
4010 HARDCOPY	$^{E}_{C}{}^{E}_{B}$	(none)
Enabling Background Copying		
BACKGROUND COPY	(none)	**HCB**ACKGROUND
HARDCOPY STATISTICS	(none)	**HCST**ATISTICS
SET HARDCOPY FEATURES	$^{E}_{C}$QX	**HCF**EATURES
Setting Dialog Copy Attributes		
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$QL	**HCDAA**TTRIB
SET HARDCOPY FEATURES	$^{E}_{C}$QX	**HCF**EATURES
Setting Color Copy Attributes: 2PPI Ports		
MAP INDEX TO PEN	$^{E}_{C}$PI	**PM**AP
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	**PCOPI**ES
Setting Color Copy Attributes: COPIER Port		
SELECT COLOR HARDCOPY IMAGE DENSITY	$^{E}_{C}$QU	**HCD**ENSITY
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 HARDCOPY FEATURES	$^{E}_{C}$QX	**HCF**EATURES
SET IMAGE ORIENTATION	$^{E}_{C}$QO	**HCO**RIENT
SET NUMBER OF COPIES	$^{E}_{C}$QN	**HCC**OPIES
Setting Monochrome Copy Attributes		
MAP INDEX TO PRINT	$^{E}_{C}$QI	**HCMA**P
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$QR	**HCDAA**TTRIB
SET HARDCOPY FEATURES	$^{E}_{C}$QX	**HCF**EATURES
SET HARDCOPY MONOCHROME ATTRIBUTES	$^{E}_{C}$QE	**HCMO**NOCHROME
SET NUMBER OF COPIES	$^{E}_{C}$QN	**HCC**OPIES
Setting LaserJet Copy Attributes		
MAP INDEX TO PRINT	$^{E}_{C}$QI	**HCMA**P
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$QL	**HCDAA**TRIB
SET HARDCOPY FEATURES	$^{E}_{C}$QX	**HCF**EATURES
SET NUMBER OF COPIES	$^{E}_{C}$QN	**HCC**OPIES

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

Command Name	Opcode[a]	Setup Name[a,b]
DIALOG AREA		
BASE COLOR[c]	(none)	**BAS**ECOLOR
CAPITALS[c]	(none)	**CAP**ITALS
CLEAR DIALOG SCROLL	$^{E}_{C}$**LZ**	**CLE**ARDIALOG
CRLF	$^{E}_{C}$**KR**	**CR**LF
CURSOR TYPE	(none)	**CURSORT**YPE
ENABLE DIALOG AREA	$^{E}_{C}$**KA**	**DAE**NABLE
LFCR	$^{E}_{C}$**KF**	**LF**CR
SET ALPHA CURSOR INDICES	$^{E}_{C}$**TD**	**AC**URSOR
SET DIALOG AREA BUFFER SIZE	$^{E}_{C}$**LB**	**DAB**UFFER
SET DIALOG AREA COLOR MAP	$^{E}_{C}$**TF**	**DAC**MAP
SET DIALOG AREA HARDCOPY ATTRIBUTES	$^{E}_{C}$**QL**	**HCDAA**TTRIB
SET DIALOG AREA INDEX	$^{E}_{C}$**LI**	**DAI**NDEX
SET DIALOG AREA LINES	$^{E}_{C}$**LL**	**DAL**INES
SET DIALOG AREA VISIBILITY	$^{E}_{C}$**LV**	**DAV**ISIBILITY
SET DIALOG AREA WRITING MODE	$^{E}_{C}$**LM**	**DAM**ODE
SET EDIT CHARACTERS	$^{E}_{C}$**KZ**	**EDITC**HARS

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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] This command is available only on terminals equipped with the coax option.

TEK-STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
GIN (GRAPHICS INPUT)		
Enabling and Disabling GIN		
CANCEL	$^{E}_{C}$**KC**	(none)
DISABLE GIN	$^{E}_{C}$**ID**	**GIND**ISABLE
ENABLE GIN	$^{E}_{C}$**IE**	**GINE**NABLE
ENABLE 4010 GIN	$^{E}_{C}S_{B}$	(none)
Setting GIN Display Characteristics		
SET GIN AREA	$^{E}_{C}$**IV**	**GINA**REA
SET GIN DISPLAY START POINT	$^{E}_{C}$**IX**	**GINST**ARTPOINT
SET GIN GRIDDING	$^{E}_{C}$**IG**	**GING**RIDDING
SET GIN INKING	$^{E}_{C}$**II**	**GINI**NKING
SET GIN RUBBERBANDING	$^{E}_{C}$**IR**	**GINR**UBBERBAND
SET GIN WINDOW	$^{E}_{C}$**IW**	**GINW**INDOW
SET PICK APERTURE	$^{E}_{C}$**IA**	**GINP**ICKAPERTURE
Controlling GIN Reports		
SET BYPASS CANCEL CHARACTER	$^{E}_{C}$**NU**	**BY**PASSCANCEL
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 GIN REPORT FORMAT	$^{E}_{C}$**IK**	**GINRE**PORT
SET GIN STROKE FILTERING	$^{E}_{C}$**IF**	**GINF**ILTERING
SET REPORT EOM FREQUENCY	$^{E}_{C}$**IM**	**REO**M
SET REPORT MAXIMUM LINE LENGTH	$^{E}_{C}$**IL**	**RL**INELENGTH
SET REPORT SIGNATURE CHARACTERS	$^{E}_{C}$**IS**	**RS**IGCHARS
SET TABLET HEADER CHARACTERS	$^{E}_{C}$**IH**	**GINSH**EADERCHARS
Controlling the GIN Cursor		
SET GIN CURSOR	$^{E}_{C}$**IC**	**GINC**URSOR
SET GIN CURSOR COLOR	$^{E}_{C}$**TC**	**G**CURSOR
SET GIN CURSOR SPEED	$^{E}_{C}$**IJ**	**GS**PEED
SET GIN RATES	$^{E}_{C}$**IU**	**GINRA**TES
SET SEGMENT POSITION	$^{E}_{C}$**SX**	**SGPO**SITION
SET SEGMENT VISIBILITY	$^{E}_{C}$**SV**	**SGV**ISIBILITY
Controlling the Mouse		
ENABLE KEY EXPANSION	$^{E}_{C}$**KN**	**KEYEXP**AND
LOCK KEYBOARD	$^{E}_{C}$**KL**	(none)
MAP MOUSE TO JOYDISK	(none)	**MO**USEMAP
SET GIN RATES	$^{E}_{C}$**IU**	**GINRA**TES

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

Command Name	Opcode[a]	Setup Name[a,b]
GRAPHICS PRIMITIVES		
Alphatext		
ENABLE DIALOG AREA	$^{E}_{C}$**KA**	**DA**ENABLE
ENTER ALPHA MODE	$^{U}_{S}$	(none)
SET 4014 ALPHATEXT SIZE	$^{E}_{C}$**8** $^{E}_{C}$**9** or $^{E}_{C}$**:** or $^{E}_{C}$**;** or	(none)
SET ALPHATEXT FONT	$^{E}_{C}$**S**$^{I}_{O}$ $^{E}_{C}$**S**$^{O}_{I}$ or	(none)
SET GRAPHICS AREA WRITING MODE	$^{E}_{C}$**MG**	**GA**MODE
SET TEXT INDEX	$^{E}_{C}$**MT**	**GTI**NDEX
Curves		
DRAW CURVE	$^{E}_{C}$**UC**	**CURV**E
SET CURVE SMOOTHNESS	$^{E}_{C}$**UG**	**CS**MOOTH
Graphtext		
BEGIN GRAPHTEXT CHARACTER	$^{E}_{C}$**ST**	**GTB**EGIN
DELETE GRAPHTEXT CHARACTER	$^{E}_{C}$**SZ**	**GTD**ELETE
END GRAPHTEXT CHARACTER	$^{E}_{C}$**SU**	**GTE**ND
GRAPHIC TEXT	$^{E}_{C}$**LT**	**GTEX**T
SET GRAPHICS AREA WRITING MODE	$^{E}_{C}$**MG**	**GA**MODE
SET GRAPHTEXT CHARACTER PATH	$^{E}_{C}$**MN**	**GTPA**TH
SET GRAPHTEXT FONT	$^{E}_{C}$**MF**	**GTF**ONT
SET GRAPHTEXT FONT GRID	$^{E}_{C}$**SG**	**GTG**RID
SET GRAPHTEXT PRECISION	$^{E}_{C}$**MQ**	**GTPR**ECISION
SET GRAPHTEXT ROTATION	$^{E}_{C}$**MR**	**GTR**OTATION
SET GRAPHTEXT SIZE	$^{E}_{C}$**MC**	**GTS**IZE
SET GRAPHTEXT SLANT	$^{E}_{C}$**MA**	**GTSL**ANT
SET TEXT INDEX	$^{E}_{C}$**MT**	**GTI**NDEX
Lines		
DRAW	$^{E}_{C}$**LG**	**DR**AW
ENTER VECTOR MODE	$^{G}_{S}$	(none)
MOVE	$^{E}_{C}$**LF**	**MO**VE
SET 4014 LINE STYLE	$^{E}_{C}$**...**	(none)
SET LINE INDEX	$^{E}_{C}$**ML**	**LINE**INDEX
SET LINE STYLE	$^{E}_{C}$**MV**	**LINES**TYLE
Markers		
DRAW MARKER	$^{E}_{C}$**LH**	**MARKER**
ENTER MARKER MODE	$^{F}_{S}$	(none)
SET GRAPHICS AREA WRITING MODE	$^{E}_{C}$**MG**	**GA**MODE
SET LINE INDEX	$^{E}_{C}$**ML**	**LINE**INDEX
SET MARKER TYPE	$^{E}_{C}$**MM**	**MARKER**TYPE
Panels		
BEGIN PANEL BOUNDARY	$^{E}_{C}$**LP**	**BEG**INPANEL
END PANEL	$^{E}_{C}$**LE**	**END**PANEL
SELECT FILL PATTERN	$^{E}_{C}$**MP**	**FIL**LPATTERN
SET LINE INDEX	$^{E}_{C}$**ML**	**LINE**INDEX
SET LINE STYLE	$^{E}_{C}$**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.

TEK-STYLE COMMANDS BY FUNCTION (cont)

Command Name	Opcode[a]	Setup Name[a,b]
HELP		
HELP	(none)	**HE**LP
STATUS	(none)	**STA**TUS
KEYBOARD		
CANCEL	$^{E}_{C}$**KC**	(none)
CLICK	(none)	**CL**ICK
CX KEYPAD[c]	(none)	**CX**KEYPAD
ENABLE KEY EXPANSION	$^{E}_{C}$**KW**	**KEYEXP**AND
LOCK KEYBOARD	$^{E}_{C}$**KL**	(none)
LOCK VIEWING KEYS	$^{E}_{C}$**RJ**	**LOCK**VIEWINGKEYS
SET BELL TYPE	(none)	**BELLT**YPE
SET BELL VOLUME	(none)	**BELLV**OLUME
SET TAB STOPS	$^{E}_{C}$**KB**	**TA**BS
MACROS		
DEFINE MACRO	$^{E}_{C}$**KD**	**DE**FINE
DEFINE NONVOLATILE MACRO	$^{E}_{C}$**KO**	**NVDE**FINE
ENABLE KEY EXPANSION	$^{E}_{C}$**KW**	**KEYEXP**AND
EXPAND MACRO	$^{E}_{C}$**KX**	**EX**PAND
LEARN	(none)	**LE**ARN
LEARN NONVOLATILE	(none)	**NVL**EARN
MACRO STATUS	(none)	**MAC**ROSTATUS
SAVE NONVOLATILE PARAMETERS	$^{E}_{C}$**KU**	**NVS**AVE
SET KEY EXECUTE CHARACTER	$^{E}_{C}$**KY**	**KEYEXC**HAR
MODES		
Selecting Host Command Modes		
SELECT CODE	$^{E}_{C}$%!	**CO**DE
SYNTAX MODE	$^{E}_{C}$#!	(none)
Selecting Implicit Command Modes		
CANCEL	$^{E}_{C}$**KC**	(none)
ENTER ALPHA MODE	$^{U}_{S}$	(none)
ENTER MARKER MODE	$^{F}_{S}$	(none)
ENTER VECTOR MODE	$^{G}_{S}$	(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] This command is available only on terminals equipped with the coax option.

Command Name	Opcode[a]	Setup Name[a,b]
PIXEL OPERATIONS		
Initializing Pixel Operations		
BEGIN PIXEL OPERATIONS	^E^C**RU**	**PXB**EGIN
SET PIXEL BEAM POSITION	^E^C**RH**	**PXP**OSITION
SET PIXEL VIEWPORT	^E^C**RS**	**PXV**IEWPORT
Writing Pixels		
PIXEL COPY	^E^C**RX**	**PXC**OPY
RASTER WRITE	^E^C**RP**	**PXRA**STER
RECTANGLE FILL	^E^C**RR**	**PXRE**CTANGLE
RUNLENGTH WRITE	^E^C**RL**	**PXRU**NLENGTH
REPORTS		
Requesting Reports		
ENQUIRY	^E^Q	(none)
REPORT DEVICE STATUS	^E^C**JQ**	(none)
REPORT ERRORS	^E^C**KQ**	(none)
REPORT GIN POINT	^E^C**IP**	(none)
REPORT PORT STATUS	^E^C**PQ**	(none)
REPORT SEGMENT STATUS	^E^C**SQ**	(none)
REPORT TERMINAL SETTINGS	^E^C**IQ**	(none)
REPORT 4010 STATUS	^E^C^E^Q	(none)
SYNTAX MODE	^E^C**#!**	(none)
Controlling Reports		
SET BYPASS CANCEL CHARACTER	^E^C**NU**	**BY**PASSCANCEL
SET COORDINATE MODE	^E^C**UX**	**COO**RDINATEMODE
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 GIN REPORT FORMAT	^E^C**IK**	**GINRE**PORT
SET GIN STROKE FILTERING	^E^C**IF**	**GINF**ILTERING
SET REPORT EOM FREQUENCY	^E^C**IM**	**REO**M
SET REPORT MAXIMUM LINE LENGTH	^E^C**IL**	**R**LINELENGTH
SET REPORT SIGNATURE CHARACTERS	^E^C**IS**	**RS**IGCHARS
SET TABLET HEADER CHARACTERS	^E^C**IH**	**GINSH**EADERCHARS
SET TERMINAL MODEL	(none)	**TER**MINAL
SCREEN DIMMING		
DIM ENABLE	^E^C**KG**	**DI**M
SECURITY		
ENQUIRY	^E^Q	(none)
ENTER BYPASS MODE	^E^C^C^N	(none)
SET ANSWERBACK STRING	(none)	**A**NSWERBACK
SET ECHO	^E^C**KE**	**EC**HO

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

Command Name	Opcode[a]	Setup Name[a,b]
SEGMENTS		
Defining Segments		
BEGIN HIGHER SEGMENT	^[c]**SN**	**SG**UP
BEGIN LOWER SEGMENT	^[c]**SB**	**SGD**OWN
BEGIN NEW SEGMENT	^[c]**SE**	**SG**NEW
BEGIN SEGMENT	^[c]**SO**	**SGO**PEN
CALL SEGMENT	^[c]**SF**	**SGC**ALL
END SEGMENT	^[c]**SC**	**SGCLO**SE
INCLUDE COPY OF SEGMENT	^[c]**LK**	**SGINC**LUDE
SET PICK ID	^[c]**MI**	**SGPIC**KID
SET PIVOT POINT	^[c]**SP**	**SGPIV**OT
Saving Segment Definitions		
PLOT	^[c]**PL**	**P**LOT
SAVE	^[c]**JV**	**SA**VE
Displaying Segments		
RENEW VIEW	^[c]**KN**	**RE**NEW
SET FIXUP LEVEL	^[c]**RF**	**FIX**UP
SET SEGMENT VISIBILITY	^[c]**SV**	**SGV**ISIBILITY
SET SEGMENT WRITING MODE	^[c]**SM**	**SGMO**DE
Transforming Segments		
SET SEGMENT IMAGE TRANSFORM	^[c]**SI**	**SGT**RANSFORM
SET SEGMENT POSITION	^[c]**SX**	**SGPO**SITION
SET SEGMENT SCALE ROTATE	^[c]**SJ**	**SGSC**ALEROTATE
Setting Segment Attributes		
SET SEGMENT CLASS	^[c]**SA**	**SGCL**ASS
SET SEGMENT DETECTABILITY	^[c]**SD**	**SGDET**ECT
SET SEGMENT DISPLAY PRIORITY	^[c]**SS**	**SGPR**IORITY
SET SEGMENT HIGHLIGHTING	^[c]**SH**	**SGH**IGHLIGHT
SET SEGMENT VISIBILITY	^[c]**SV**	**SGV**ISIBILITY
Assigning Segment Classes		
SET CURRENT MATCHING CLASS	^[c]**SL**	**SGMA**TCHINGCLASS
SET SEGMENT CLASS	^[c]**SA**	**SGCL**ASS
Editing Segments		
DELETE PART OF SEGMENT	^[c]**UD**	**SGREM**OVE
DELETE SEGMENT	^[c]**SK**	**SGDEL**ETE
INSERT INTO SEGMENT	^[c]**UI**	**SGINS**ERT
RENAME SEGMENT	^[c]**SR**	**SGREN**AME
REPLACE PART OF SEGMENT	^[c]**UE**	**SGREP**LACE
SET SEGMENT EDIT MODE	^[c]**UH**	**SGE**DIT
Reporting Segment Attributes to the Host		
REPORT SEGMENT STATUS	^[c]**SQ**	(none)

[a] In Tek-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] This command is available only on terminals equipped with the coax option.

Command Name	Opcode[a]	Setup Name[a,b]
SURFACES		
SELECT VIEW	$^{E}_{C}$**RC**	**VS**ELECT
SET BACKGROUND COLOR	$^{E}_{C}$**TB**	**CB**ACKGROUND
SET BACKGROUND INDICES	$^{E}_{C}$**MB**	**BAC**KINDEX
SET SURFACE COLOR MAP	$^{E}_{C}$**TG**	**CMA**P
SET SURFACE DEFINITIONS	$^{E}_{C}$**RD**	**SD**EFINITIONS
SET SURFACE PRIORITIES	$^{E}_{C}$**RN**	**SP**RIORITIES
SET SURFACE VISIBILITY	$^{E}_{C}$**RI**	**SV**ISIBILITY
SET VIEW ATTRIBUTES	$^{E}_{C}$**RA**	**VA**TTRIBUTES
VIEWS		
Controlling Multiple Views		
DELETE VIEW	$^{E}_{C}$**RK**	**VD**ELETE
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 Tek-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.

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	Host Command 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 (SET FLAGGING MODE)
$^{D}3$	T A V	XOFF (SET FLAGGING MODE)
^{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#!	T A V	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) (specifies 94-character G0 set)
^{E}C)	A	SCS (SELECT CHARACTER SET) (specifies 94-character G1 set)
^{E}C-	A	SCS (SELECT CHARACTER SET) (specifies 96-character G1 set)
^{E}C7	A	TEKSC (SAVE CURSOR)
^{E}C8	A	TEKRC (RESTORE CURSOR)
	T	SET 4014 ALPHATEXT SIZE
^{E}C9	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

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

Opcode	Host Command Mode[a]	Command Name
^[E]C>	A	TEKKPNM (KEYPAD NUMERIC MODE)
	V	EXIT ALTERNATE KEYPAD MODE
^[E]CA	V	CURSOR UP
^[E]CB	V	CURSOR DOWN
^[E]CC	V	CURSOR RIGHT
^[E]CD	A	IND (INDEX)
	V	CURSOR LEFT
^[E]CE	A	NEL (NEXT LINE)
^[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]CIU	T	SET GIN RATES
^[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]CJL	T	LOAD
^[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

(continued)

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

COMMANDS BY OPCODE (cont)

Opcode	Host Command Mode[a]	Command Name
^{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
^{E}cLK	T	INCLUDE COPY OF SEGMENT
^{E}cLL	T	SET DIALOG AREA LINES
^{E}cLM	T	SET DIALOG AREA WRITING MODE
^{E}cLP	T	BEGIN PANEL BOUNDARY
^{E}cLT	T	GRAPHIC TEXT
^{E}cLV	T	SET DIALOG AREA VISIBILITY
^{E}cLZ	T	CLEAR DIALOG SCROLL
^{E}cM	A	REVERSE INDEX
^{E}cMA	T	SET GRAPHTEXT SLANT
^{E}cMB	T	SET BACKGROUND INDICES
^{E}cMC	T	SET GRAPHTEXT SIZE
^{E}cMF	T	SET GRAPHTEXT FONT
^{E}cMG	T	SET GRAPHICS AREA WRITING MODE
^{E}cMI	T	SET PICK ID
^{E}cML	T	SET LINE INDEX
^{E}cMM	T	SET MARKER TYPE
^{E}cMN	T	SET GRAPHTEXT CHARACTER PATH
^{E}cMP	T	SELECT FILL PATTERN
^{E}cMQ	T	SET GRAPHTEXT PRECISION
^{E}cMR	T	SET GRAPHTEXT ROTATION
^{E}cMT	T	SET TEXT INDEX
^{E}cMV	T	SET LINE STYLE
^{E}cNB	T	SET STOP BITS
^{E}cNC	T	SET EOM CHARACTERS
^{E}cND	T	SET TRANSMIT DELAY
^{E}cNE	T	SET EOF STRING
^{E}cNF	T	SET FLAGGING MODE
^{E}cNK	T	SET BREAK TIME
^{E}cNL	T	SET TRANSMIT RATE LIMIT
^{E}cNM	T	PROMPT MODE
^{E}cNP	T	SET PARITY
^{E}cNQ	T	SET QUEUE SIZE
^{E}cNR	T	SET BAUD RATES
^{E}cNS	T	SET PROMPT STRING
^{E}cNT	T	SET EOL STRING
^{E}cNU	T	SET BYPASS CANCEL CHARACTER

[a] T = TEK mode
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V = VT52 mode

Opcode	Host Command Mode[a]	Command Name
^[c]OI	T	TEK HEADER CHARACTER
^[c]P	A	TEKDCS (DOWNLOAD CHARACTER SET)
^[c]PA	T	PORT ASSIGN
^[c]PB	T	SET PORT STOP BITS
^[c]PC	T	PORT COPY
^[c]PE	T	SET PORT EOF STRING
^[c]PF	T	SET PORT FLAGGING MODE
^[c]PI	T	MAP INDEX TO PEN
^[c]PJ	T	SET PORT BLACK WHITE INVERSION
^[c]PL	T	PLOT
^[c]PN	T	SET PORT NUMBER OF COPIES
^[c]PO	T	SET PORT IMAGE ORIENTATION
^[c]PP	T	SET PORT PARITY
^[c]PQ	T	REPORT PORT STATUS
^[c]PR	T	SET PORT BAUD RATE
^[c]QA	T	SET COPY SIZE
^[c]QB	T	SET COLOR COPIER DATA RESOLUTION
^[c]QD	T	SELECT HARDCOPY INTERFACE
^[c]QE	T	SET HARDCOPY MONOCHROME ATTRIBUTES
^[c]QI	T	MAP INDEX TO PRINT
^[c]QL	T	SET DIALOG AREA HARDCOPY ATTRIBUTES
^[c]QN	T	SET NUMBER OF COPIES
^[c]QO	T	SET IMAGE ORIENTATION
^[c]QT	T	SET COLOR COPIER REPAINT
^[c]QU	T	SELECT COLOR HARDCOPY IMAGE DENSITY
^[c]QX	T	SET HARDCOPY FEATURES
^[c]RA	T	SET VIEW ATTRIBUTES
^[c]RC	T	SELECT VIEW
^[c]RD	T	SET SURFACE DEFINITIONS
^[c]RE	T	SET BORDER VISIBILITY
^[c]RF	T	SET FIXUP LEVEL
^[c]RH	T	SET PIXEL BEAM POSITION
^[c]RI	T	SET SURFACE VISIBILITY
^[c]RJ	T	LOCK VIEWING KEYS
^[c]RK	T	DELETE VIEW
^[c]RL	T	RUNLENGTH WRITE
^[c]RN	T	SET SURFACE PRIORITIES
^[c]RP	T	RASTER WRITE
^[c]RQ	T	SET VIEW DISPLAY CLUSTER
^[c]RR	T	RECTANGLE FILL
^[c]RS	T	SET PIXEL VIEWPORT
^[c]RU	T	BEGIN PIXEL OPERATIONS
^[c]RV	T	SET VIEWPORT
^[c]RW	T	SET WINDOW
^[c]RX	T	PIXEL COPY
^[c]SA	T	SET SEGMENT CLASS
^[c]SB	T	BEGIN LOWER SEGMENT
^[c]SC	T	END SEGMENT

(continued)

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

COMMANDS BY OPCODE (cont)

Opcode	Host Command Mode[a]	Command Name
ESC SD	T	SET SEGMENT DETECTABILITY
ESC SE	T	BEGIN NEW SEGMENT
ESC SF	T	CALL SEGMENT
ESC SG	T	SET GRAPHTEXT FONT GRID
ESC SH	T	SET SEGMENT HIGHLIGHTING
ESC SI	T	SET SEGMENT IMAGE TRANSFORM
ESC SJ	T	SET SEGMENT SCALE ROTATION
ESC SK	T	DELETE SEGMENT
ESC SL	T	SET CURRENT MATCHING CLASS
ESC SM	T	SET SEGMENT WRITING MODE
ESC SN	T	BEGIN HIGHER SEGMENT
ESC SO	T	BEGIN SEGMENT
ESC SP	T	SET PIVOT POINT
ESC SQ	T	REPORT SEGMENT STATUS
ESC SR	T	RENAME SEGMENT
ESC SS	T	SET SEGMENT DISPLAY PRIORITY
ESC ST	T	BEGIN GRAPHTEXT CHARACTER
ESC SU	T	END GRAPHTEXT CHARACTER
ESC SV	T	SET SEGMENT VISIBILITY
ESC SX	T	SET SEGMENT POSITION
ESC SZ	T	DELETE GRAPHTEXT CHARACTER
ESC TB	T	SET BACKGROUND COLOR
ESC TC	T	SET GIN CURSOR COLOR
ESC TD	T	SET ALPHA CURSOR INDICES
ESC TF	T	SET DIALOG AREA COLOR MAP
ESC TG	T	SET SURFACE COLOR MAP
ESC TM	T	SET COLOR MODE
ESC UC	T	DRAW CURVE
ESC UD	T	DELETE PART OF SEGMENT
ESC UE	T	REPLACE PART OF SEGMENT
ESC UG	T	SET CURVE SMOOTHNESS
ESC UH	T	SET SEGMENT EDIT MODE
ESC UI	T	INSERT INTO SEGMENT
ESC UX	T	SET COORDINATE MODE
ESC Y	V	DIRECT CURSOR ADDRESS
ESC Z	A	TEKID (IDENTIFY TERMINAL)
	V	IDENTIFY
ESC [SP @	A	SL (SCROLL LEFT)
ESC [SP A	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)

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

Opcode	Host Command Mode[a]	Command Name
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[<2h	A	SM (Set DOWNLOAD CHARACTER 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)
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[<2l	A	RM (Reset DOWNLOAD CHARACTER 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

Most commands have a Setup version — that is, they can be issued directly from the keyboard. The Setup commands are listed here alphabetically.

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
BELLTYPE	SET BELL TYPE
BELLVOLUME	SET BELL VOLUME
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]
COORDINATEMODE	SET COORDINATE MODE
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
DECODE	DECODE
DEFINE	DEFINE MACRO
DIM	DIM ENABLE
DLCHARSET	RM & SM Commands (TEKDCM)[b]
DLSELECTCHARSET	SCS (SELECT CHARACTER SET)

[a] Unless otherwise noted, commands are Tek-style; see Tek-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] This command is available only on terminals equipped with the coax option.

Setup Command Name	Descriptive Name[a]
DRAW	DRAW
ECHO	SET ECHO
EDITCHARS	SET EDIT CHARACTERS
EDITMARGINS	RM & SM Commands (TEKSTBM)[b]
ENCODE	ENCODE
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
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
GINRATES	SET GIN RATES
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

(continued)

[a] Unless otherwise noted, commands are Tek-style; see Tek-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] This command is available only on terminals equipped with the coax option.

COMMANDS BY SETUP NAME (cont)

Setup Command Name	Descriptive Name[a]
GTSLANT	SET GRAPHTEXT SLANT
HCBACKGROUND	BACKGROUND COPY
HCCOPIES	SET NUMBER OF COPIES
HCDAATTRIBUTES	SET DIALOG AREA HARDCOPY ATTRIBUTES
HCDATARES	SET COLOR COPIER DATA RESOLUTION
HCDENSITY	SELECT COLOR HARDCOPY IMAGE DENSITY
HCFEATURES	SET HARDCOPY FEATURES
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
HCSTATISTICS	HARDCOPY STATISTICS
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]
	TEKKPNM (KEYPAD NUMERIC MODE)[b]
	ENTER ALTERNATE KEYPAD MODE[c]
	EXIT ALTERNATE KEYPAD MODE[c]
LEARN	LEARN
LFCR	LFCR
LINEINDEX	SET LINE INDEX
LINESTYLE	SET LINE STYLE
LOAD	LOAD
LOCAL	LOCAL
LOCKVIEWINGKEYS	LOCK VIEWING KEYS
MACROSTATUS	MACRO STATUS
MARKER	DRAW MARKER
MARKERTYPE	SET MARKER TYPE
MOUSEMAP	MAP MOUSE TO JOYDISK
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

[a] **Unless otherwise noted, commands are Tek-style; see Tek-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] **This command is available only on terminals equipped with the coax option.**

Setup Command Name	Descriptive Name[a]
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
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

(continued)

[a] Unless otherwise noted, commands are Tek-style; see Tek-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] This command is available only on terminals equipped with the coax option.

COMMANDS BY SETUP NAME (cont)

Setup Command Name	Descriptive Name[a]
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
TERMINAL	SET TERMINAL MODEL
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 Tek-style; see the Tek-style command descriptions.
[b] An ANSI-style command; see the ANSI-style command descriptions.
[c] A VT52-style command; see the VT52-style command descriptions.
[d] All host command modes.
[e] This command is available only on terminals equipped with the coax option.

COMMANDS SAVED IN NONVOLATILE MEMORY

The SAVE NONVOLATILE PARAMETERS command (Tek-style) saves the settings of commands whose settings changed since the terminal was last turned on or reset (using the RESET button or command). The commands that can be saved in nonvolatile memory are listed here alphabetically (all commands are Tek-style, unless otherwise noted).

BACKGROUND COPY
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 COLOR HARDOPY IMAGE DENSITY
SELECT HARDCOPY INTERFACE
SET ALPHA CURSOR INDICES
SET ANSWERBACK STRING
SET BAUD RATES
SET BELL TYPE
SET BELL VOLUME
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

(continued)

[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.

COMMANDS SAVED IN NONVOLATILE MEMORY (cont)

SET FLAGGING MODE
SET GIN CURSOR COLOR
SET GIN CURSOR SPEED
SET GRAPHICS AREA WRITING MODE
SET HARDCOPY FEATURES
SET HARDCOPY MONOCHROME ATTRIBUTES
SET IMAGE ORIENTATION
SET KEY EXECUTE CHARACTER
SET PARITY
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 TERMINAL MODEL
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

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[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.**

COMMANDS SAVED IN AN ENVIRONMENT

The SAVE command (Tek-style) saves the terminal's environment either to a host or to a psuedofile in volatile memory. The commands that are saved in an environment are listed here (they are all Tek-style commands).

BEGIN PIXEL OPERATIONS
CRLF
DIM ENABLE
ENABLE DIALOG AREA
ENABLE KEY EXPANSION
IGNORE DELETES
LFCR
LOCK KEYBOARD
LOCK VIEWING KEYS
MAP INDEX TO PEN
PORT ASSIGN[a]
PROMPT MODE
SELECT CODE
SELECT FILL PATTERN
SELECT HARDCOPY IMAGE DENSITY
SELECT HARDCOPY INTERFACE
SELECT VIEW
SET ALPHA CURSOR INDICES
SET BACKGROUND COLOR
SET BACKGROUND INDICES
SET BAUD RATE[b]
SET BORDER VISIBILITY
SET BREAK TIME
SET BYPASS CANCEL CHARACTER
SET COLOR COPIER DATA RESOLUTION
SET COLOR COPIER REPAINT
SET COLOR MODE
SET COORDINATE MODE
SET COPY SIZE
SET CURVE SMOOTHNESS
SET DIALOG AREA BUFFER SIZE
SET DIALOG AREA COLOR MAP
SET DIALOG AREA HARDCOPY ATTRIBUTES
SET DIALOG AREA INDICES
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 ERROR THRESHOLD
SET FIXUP LEVEL
SET FLAGGING MODE[b]
SET GIN CURSOR COLOR
SET GIN CURSOR SPEED
SET GIN REPORT FORMAT

(continued)

[a] This value is saved for both PORT 0 and PORT 1.
[b] This value is saved only when destination is a pseudofile (rather than the host).
[c] This value is saved once for each defined view.
[d] This value is saved only on terminals with the coax option.

COMMANDS SAVED IN AN ENVIRONMENT (cont)

SET GIN WINDOW
SET GRAPHICS AREA WRITING MODE
SET GRAPHTEXT CHARACTER PATH
SET GRAPHTEXT FONT
SET GRAPHTEXT PRECISION
SET GRAPHTEXT ROTATION
SET GRAPHTEXT SIZE
SET GRAPHTEXT SLANT
SET HARDCOPY FEATURES
SET HARDCOPY MONOCHROME ATTRIBUTES
SET IMAGE ORIENTATION
SET KEY EXECUTE CHARACTER
SET LINE INDEX
SET LINE STYLE
SET MARKER TYPE
SET NUMBER OF COPIES
SET PARITY[b]
SET PICK APERTURE
SET PIVOT POINT
SET PIXEL BEAM POSITION
SET PIXEL VIEWPORT
SET PORT BAUD RATES[a]
SET PORT EOF STRING[a]
SET PORT FLAGGING MODE[a]
SET PORT PARITY[a]
SET PORT STOP BITS[a]
SET PROMPT STRING
SET QUEUE SIZE[b]
SET REPORT EOM FREQUENCY
SET REPORT MAXIMUM LINE LENGTH
SET SEGMENT EDIT MODE
SET SNOOPY MODE[b]
SET STOP BITS[b]
SET SURFACE COLOR MAP
SET SURFACE DEFINITIONS
SET SURFACE PRIORITY
SET SURFACE VISIBILITY
SET TABLET HEADER CHARACTERS
SET TEK HEADER CHARACTER[d]
SET TERMINAL MODEL[b]
SET TEXT INDEX
SET TRANSMIT DELAY
SET TRANSMIT RATE LIMIT
SET VIEW ATTRIBUTES[c]
SET VIEW DISPLAY CLUSTER
SET VIEWPORT[c]
SET WINDOW[c]

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[a] This value is saved for both PORT 0 and PORT 1.
[b] This value is saved only when destination is a pseudofile (rather than the host).
[c] This value is saved once for each defined view.
[d] This value is saved only on terminals with the coax option.

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

The host syntax of an ANSI command starts with the *control sequence introducer* (ESC[) and may include one or more parameters and a command terminator character. The host syntax of a VT52 command consists of the Escape character (ESC) followed by a single character, and in only one case requires a parameter value.

Some ANSI commands also have a Setup syntax, which allows them to be issued from the keyboard. All Setup commands start with a Setup name and may include one or more parameters.

Using ANSI Host Syntax

Here are some guidelines for issuing ANSI commands from a host program:

- Do not use spaces between the parts of a command. (In a few cases, a Space character (SP) is a valid part of a host command.)
- When a command has more than one parameter, separate the parameters with semicolons (the SCS and TEKDCS commands are exceptions — see their command descriptions later in this section for details).
- 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. (Unlike the integer parameters of Tek-style commands, these parameters do *not* require encoding.)
- Some parameters for the MC, RM, SGR, and SM commands are *Tektronix-private parameters.* These parameters consist of one of four special characters (<, =, >, or ?) followed by an integer.

(continued)

Using VT52 Host Syntax

Here are some guidelines for issuing VT52 commands from a host program:

- Do not use spaces between the parts of a command.
- Most VT52 commands don't have parameters. The only exception is the DIRECT CURSOR ADDRESS command, which requires that you not use separators between the two parameters and that you encode the parameter values — the scheme is described in that command's description.

Using Setup Syntax

Here are some guidelines for issuing commands from the terminal keyboard:

- Use a space between a command's Setup name and the list of parameters that follow.
- Enter parameters on the same line as the Setup name, and separate the parameters from each other with a space or a comma.
- When entering commands, you can abbreviate the Setup name and any keyword parameters — just enter as many letters as needed to identify it uniquely. For example, in the command description shown in Figure 3-10, the Setup name is *CODE,* and the keywords are *ANSI, EDIT, VT52,* and *TEK* — so you can select ANSI mode by issuing the abbreviation *COD A* rather than the full syntax *CODE ANSI.* (If you tried to abbreviate the Setup name further — to *CO*, for example, the terminal would issue an error message since it wouldn't know whether you meant *CODE* or *COLUMNMODE*.)

About Omitting ANSI Parameters

In both host and Setup syntax, you can omit parameters from ANSI commands and the terminal will supply a default value, which is called the *omitted default*. The omitted default for each parameter is listed in the command description. How you omit the parameter depends on its position in the list of parameters:

- If the parameter is the only one in the command or is the last of two or more parameters, you simply omit it.
- If the parameter is not the last one, use a separator to indicate the omitted parameter's position in relation to the parameters. In host syntax, the semicolon (;) acts as the separator; in Setup syntax, the comma (,) acts as the separator.

For example, consider the TEKSTBM command, which has two parameters (*top-margin* and *bottom-margin)*. To set the top margin to its omitted default (which is Row 1) and the bottom margin to Row 24, you would issue:

Host: **ᴱc;24r**
Setup: **EDITMARGIN ,24**

To set the top margin to Row 5 and the bottom margin to its omitted default (which is the last line of the dialog area), you would issue:

Host: ^{E}c**5**
Setup: **EDITMARGIN 5**

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 do the same thing.

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.

BEL (BELL)

Sounds the terminal's bell.

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

BS (BACK SPACE)

Moves the cursor left one position.

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

CAN (CANCEL)

Cancels an ANSI command in progress.

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

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**

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**

CR (CARRIAGE RETURN)

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

Host: ^{C}R

If the Tek-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: ^{E}C[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: ^{E}C**[5C**

CUP (CURSOR POSITION)

Moves the cursor to the specified row and column.

Host: ^{E}C[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: ^{E}C**[5;12H**

CUU (CURSOR UP)

Moves the cursor upward one or more lines.

Host: ^{E}C**[** 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: ^{E}C**[20A**

DA (DEVICE ATTRIBUTES)

Queries the terminal for what kind of terminal it is.

Host: ^{E}C**[0c**
Report: ^{E}C**[?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: ^{E}C**[** 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: ^{E}C**[10P**

DL (DELETE LINE)

Deletes one or more lines, starting with the current line.

Host: ^{E}C**[** 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: ^{E}C**[5M**

DMI (DISABLE MANUAL INPUT)

Disables the keyboard.

Host: ^{E}C l

Issuing this command is equivalent to issuing the ANSI command SM to set Keyboard Action Mode (KAM) or to issuing the Tek-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: ^{E}C**[** 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

The ANSI Device Status Report should always be ^{E}C**[0n**, which means the terminal is functioning properly.

ECH (ERASE CHARACTER)

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

Host: ^{E}C**[** 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: ^{E}C**[15X**

ED (ERASE IN DISPLAY)

Erases all or part of the dialog buffer.

Host: ^{E}C**[** 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: ^{E}C**[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 Tek-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.

FF (FORM FEED)

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

Host: $^{F}_{F}$

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

HT (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 Tek-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 Tek-style command SET TAB STOPS, which sets 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: ^[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: ^[C[20@

IL (INSERT LINE)

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

Host: ^[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: ^[C[5L

IND (INDEX)

Moves the cursor down one line without moving it horizontally.

Host: ^[C**D**

IRM (INSERT/REPLACE MODE)

Specifies whether each newly entered character replaces an existing character or is inserted at the cursor position.

Setup: **INSERTREPLACE** mode

mode: keyword; specifies whether characters replace or are inserted before existing characters. Valid values are: *insert* and *replace*.
Defaults: Factory = replace
Omitted = replace

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

LF (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.

LNM (LINEFEED/NEWLINE MODE)

Specifies whether a $^{L}_{F}$ (Line Feed) character sent to the terminal also implies a $^{C}_{R}$ (Carriage Return). (Can be saved in nonvolatile memory.)

Setup: **LFCR** mode

mode: keyword; specifies whether a Line Feed also implies a $^{C}_{R}$. Valid values are: *no* and *yes*.
Defaults: Factory = no
Omitted = yes

This command has the same effect as the Tek-style LFCR command.

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

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 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.

RI (REVERSE INDEX)

Moves the cursor up one line without moving it horizontally.

Host: ^{E}cM

RIS (RESET TO INITIAL STATE)

Resets certain terminal attributes to their default values.

Host: ^{E}cc

The default values are either factory defaults or the defaults 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
- Deletes downloaded character sets
- Enables the dialog area and makes it visible

RM (RESET MODE)

Resets one or more terminal modes set with the SM (SET MODE) command.

Host: ESC[mode . . . l
Setup: (See Table 5)

mode: resets one or more ANSI modes. Table 5 (under the SM command description) shows both host and Setup syntax.

Defaults: Factory = See Table 5 (under SM)
Omitted = Error

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

For details of each mode, look up each mode separately under its own name.

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

SCS (SELECT CHARACTER SET)

Designates a predefined or downloaded character set as the G0 or G1 character set.

Host: Esc set-selector set-designator
Setup: **DLSELECTCHARSET** set-selector, set-designator, set-size

set-selector: designates the character set as the G0 or G1 set. See Tables 1 and 2 for complete syntax.
Defaults: Factory = G0
Omitted = (none)

set-designator: specifies a character set. Must be entered as a delimited string in Setup. Specify predefined character sets as shown in Tables 1 and 2; specify downloadable character sets with up to three ASCII characters.
Defaults: Factory = Determined by keyboard
Omitted = (none)

set-size: specifies the character set size (Setup syntax only). Must be *94* or *96*.
Defaults: Factory = 94
Omitted = 94

The SCS command controls the character set that the terminal uses to display alphatext or string-precision graphtext — it doesn't affect the characters displayed in Setup.

You can use the older Setup name *SELECTCHARSET* rather than *DLSELECTCHARSET*; however, you can't access downloaded character sets that have two- or three-character designators. If you use SELECTCHARSET, don't use delimiters in the *set-designator* parameter.

SD (SCROLL DOWN)

Scrolls lines down.

Host: Esc**[** 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: Esc**[8T**

Table 1
HOST SYNTAX FOR THE SCS COMMAND

Character Set	To Assign as G0 (Primary Set)	To Assign as G1 (Alternate Set)
United Kingdom	$^{E}_{C}$(A	$^{E}_{C}$)A
North American (ASCII)	$^{E}_{C}$(B	$^{E}_{C}$)B
Swedish	$^{E}_{C}$(G	$^{E}_{C}$)G
German	$^{E}_{C}$(K	$^{E}_{C}$)K
French[a]	$^{E}_{C}$(f	$^{E}_{C}$)f
Danish/ Norwegian	$^{E}_{C}$(\	$^{E}_{C}$)\
Rulings	$^{E}_{C}$(0	$^{E}_{C}$)0
Supplementary	$^{E}_{C}$(3	$^{E}_{C}$)3
Multilingual (ASCII)	(none)	$^{E}_{C}$-A
94-Character Downloadable[b]	$^{E}_{C}$(*yyy*	$^{E}_{C}$)*yyy*
96-Character Downloadable[b]	(none)	$^{E}_{C}$-*yyy*

[a] You can still use *R* to select the French character set, but the current standard is *f*. For compatibility with current and future standards, you should use *f*.

[b] The *yyy* in the syntax represents the *set-designator* for the set you want to use, as defined in the TEKDCS command.

Table 2
SETUP SYNTAX FOR THE SCS COMMAND

Character Set	To Assign as G0 (Primary Set)	To Assign as G1 (Alternate Set)
United Kingdom	DLSELECT G0,/A/	DLSELECT G1,/A/
North American (ASCII)	DLSELECT G0,/B/	DLSELECT G1,/B/
Swedish	DLSELECT G0,/G/	DLSELECT G1,/G/
German	DLSELECT G0,/K/	DLSELECT G1,/K/
French[a]	DLSELECT G0,/f/	DLSELECT G1,/f/
Danish/ Norwegian	DLSELECT G0,/\ /	DLSELECT G1,/\ /
Rulings	DLSELECT G0,/0/	DLSELECT G1,/0/
Supplementary	DLSELECT G0,/3/	DLSELECT G1,/3/
Multilingual (ASCII)	(none)	DLSELECT G1,/A/,96
94-Character Downloadable[b]	DLSELECT G0,/*yyy*/	DLSELECT G1,/*yyy*/
96-Character Downloadable[b]	(none)	DLSELECT G1,/*yyy*/,96

[a] You can still use *R* to select the French character set, but the current standard is *f*. For compatibility with current and future standards, you should use *f*.

[b] The *yyy* in the syntax represents the *set-designator* for the set you want to use, as defined in the TEKDCS command.

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**

SGR (SELECT GRAPHIC RENDITION)

Selects display attributes for text in the dialog area.

Host: $^{E}C[$ graphic-rendition . . . **m**
Setup: **TEXTRENDITION** graphic-rendition . . .

graphic-rendition: specifies the colors and other display characteristics for text displayed in the dialog area. Tables 3 and 4 contain the parameter values and descriptions.
Defaults: Factory = 0
Omitted = 0

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

Table 3
SGR PREFIXED PARAMETER VALUES[a]

Display Characteristic	Parameter[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 can be saved in nonvolatile memory.**
[b] ***index* is a variable — you fill in a number from 0 to 7 to specify a color.**

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 ^EC[4;31m
Setup **TEXTRENDITION 4,31**

Table 4
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
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; they cannot be saved in nonvolatile memory.**

SI (SHIFT IN)

Invokes the current G0 character set.

Host: ^SI

SL (SCROLL LEFT)

Scrolls columns left.

Host: ^[C[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: ^[C[12^SP@

SM (SET MODE)

Sets one or more terminal modes — used with the RM (RESET MODE) command.

Host: ^[C[mode . . . **h**
Setup: (See Table 5)

mode: sets one or more ANSI modes. Table 5 shows both host and Setup syntax, including parameter values.
Defaults: Factory = See Table 5
Omitted = Error

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

For details of each mode, look up each mode separately under its own name.

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 **^[C[4;20h**
Setup **INSERTREPLACE INSERT**
LFCR YES

Table 5
RM AND SM PARAMETER VALUES

Mode Name[a]	Action	Host[b] Syntax	Setup Syntax
IRM (Insert/ Replace Mode)	***Reset:*** Replace[c]	ESC[4l	INSERTREPLACE REPLACE
	Set: Insert	ESC[4h	INSERTREPLACE INSERT
KAM (Keyboard Action Mode)	***Reset:*** Enables keyboard[c]	ESC[2l	(none)
	Set: Disables keyboard	ESC[2h	(none)
LNM (Linefeed/ Newline Mode)	***Reset:*** Line Feed only[c]	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[c]	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[c]	ESC[?8h	AUTOREPEAT YES
TEKAWM (Autowrap Mode)	***Reset:*** Disables autowrap	ESC[?7l	AUTOWRAP NO
	Set: Enables autowrap[c]	ESC[?7h	AUTOWRAP YES
TEKCKM (Cursor Keys Mode) *See also Table 6*	***Reset:*** Function Keys F1 — F4 transmit normal commands or programmed values[c]	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[c]	ESC[?3l	COLUMNMODE 80
	Set: Specifies 132 column dialog buffer	ESC[?3h	COLUMNMODE 132
TEKDCM (Downloadable Character Mode)	***Reset:*** Disables display of downloaded character sets and the Multilingual character set[c]	ESC[<2l	DLCHARSET NO
	Set: Enables display of downloaded character sets and the Multilingual character set	ESC[<2h	DLCHARSET YES
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[c]	ESC[?6h	ORIGINMODE RELATIVE
TEKORM (Overstrike/ Replace Mode)	***Reset:*** Space and Underscore replace existing characters[c]	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[c]	ESC[?5l	SCREENMODE NORMAL
	Set: Reverse colors; Index 0 opaque	ESC[?5h	SCREENMODE REVERSE

[a] **You can also look up each of these modes under its mode name (except KAM which has no Setup syntax).**

[b] **The terminating character for resetting modes is the lowercase L (l).**

[c] **This is the factory default.**

SO (SHIFT OUT)

Invokes the G1 character set.

Host: ^{S}o

SR (SCROLL RIGHT)

Scrolls columns right.

Host: ^{E}c[number-of-columns ^{S}p**A**

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: ^{E}c**[12**^{S}p**A**

Table 6
CURSOR KEYS MODE CODES

Function Key	Codes Sent When Set (SM)	Codes Sent When Reset (RM)
F1	^{E}cOA	^{E}c[A
F2	^{E}cOB	^{E}c[B
F3	^{E}cOD	^{E}c[D
F4	^{E}cOC	^{E}c[C

SRM (SEND/RECEIVE MODE)

Specifies whether the terminal echos data entered at the keyboard. (Can be saved in nonvolatile memory.)

Setup: **ECHO** mode

mode: keyword; specifies whether the terminal provides its own echo. Valid values are: *no* and *yes*.
Defaults: Factory = no
Omitted = yes

This command has the same effect as the Tek-style SET ECHO command.

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

SU (SCROLL UP)

Scrolls lines up.

Host: ^{E}C**[** 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: ^{E}C**[12S**

SUB (SUBSTITUTE)

Cancels an ANSI command in progress and inserts a ^{S}B character at the current cursor location in the dialog area.

Host: ^{S}B

SYNTAX MODE

Saves, restores, or reports the host command mode setting.

Host: **ESC#!** operation

operation: integer; valid values are:

0 Reports the host command mode
1 Saves the host command mode
2 Restores the host command mode

Defaults: Factory = (none)
Omitted = Error

This command is recognized in all host command modes.

Example: **ESC#!1**

TBC (TAB CLEAR)

Clears one or more tab stops.

Host: **ESC[** 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: **ESC[2g**

TEKANM (ANSI-TO-VT52 MODE)

Selects VT52 mode.

Setup: **CODE VT52**

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKARM (AUTOREPEAT MODE)

Specifies whether keys on the terminal's keyboard repeat when held down. (Can be saved in nonvolatile memory.)

Setup: **AUTOREPEAT** mode

mode: keyword; specifies whether terminal keys repeat when held down. Valid values are: *no* and *yes*.
Defaults: Factory = yes
Omitted = yes

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKAWM (AUTOWRAP MODE)

Specifies whether characters written to the rightmost column overwrite existing characters or wrap to the next line. (Can be saved in nonvolatile memory.)

Setup: **AUTOWRAP** mode

mode: keyword; specifies whether or not characters wrap to next line. Valid values are: *no* and *yes*.
Defaults: Factory = yes
Omitted = yes

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKCKM (CURSOR KEYS MODE)

Specifies whether or not Function Keys F1 through F4 transmit ANSI cursor-control commands.

Setup: **CURSORKEYMODE** mode

mode: keyword; specifies whether keys F1 through F4 transmit cursor control commands. Valid values are: *no* and *yes*.

Defaults: Factory = no
Omitted = yes

Table 7 shows the codes that Keys F1 through F4 transmit.

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

Table 7
CURSOR KEYS MODE CODES

Function Key	Codes Sent When Cursor Keys Mode is Set to Yes	Codes Sent When Cursor Keys Mode is Set to No
F1	^{E}cOA	^{E}c[A
F2	^{E}cOB	^{E}c[B
F3	^{E}cOD	^{E}c[D
F4	^{E}cOC	^{E}c[C

TEKCOLM (COLUMN MODE)

Selects 80- or 132-column width for the dialog buffer. (Can be saved in nonvolatile memory.)

Setup: **COLUMNMODE** mode

mode: keyword; specifies the width of the dialog buffer. Valid values are: *80* and *132*.
Defaults: Factory = 80
Omitted = 80

Setting and resetting this mode erases the contents of the dialog area and resets the edit margins to the top and bottom lines of the dialog area.

(On the 4208, if Column mode is set to 132, the maximum number of dialog area lines is reduced from 32 to 30.)

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKDCM (DOWNLOAD CHARACTER MODE)

Enables or disables the display of downloadable character sets and the Multilingual character set.

Setup: **DLCHARSET** mode

mode: specifies whether a host program can access the application-addressable portion of character memory. Valid values are: *yes* and *no*.
Defaults: Factory = no
Omitted = no

In Download Character mode, you can use only Indices 0 through 3 for the character background and dialog background colors. If Indices 4 through 7 are assigned, the terminal maps them to Indices 0 through 3 (for Index 4, the terminal uses Index 0; for Index 5, the terminal would use Index 1; etc.).

If you're using any reverse display features, see the Programmers Manual for interactions.

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKDCS (DOWNLOAD CHARACTER SET)

Defines one or more characters to be part of a downloadable character set.

Host: $^{E}_{C}$**P** set-size ; starting-position ; erase-control ; start-row ; end-row ; start-column ; end-column $^{S}_{P}${ set-designator character-definition . . . $^{E}_{C}$\

set-size: specifies the character set size. Valid entries are:

0 For 94 characters
1 For 96 characters

Defaults: Factory = (none)
Omitted = 0

starting-position: specifies the position (within the character set) of the first character to be defined. Specify the position by subtracting 32 from the ADE value of the character position you want to define. Valid range is 1 through 94 (for 94 characters), or 0 through 95 (for 96 characters).

Defaults: Factory = (none)
Omitted = 0 (invalid if *set-size* is *94*)

erase-control: specifies which characters in the character set will be erased before defining the new characters. Valid values are:

0 Erases all characters in this character set
1 Erases only those characters being replaced by newly defined characters

Defaults: Factory = (none)
Omitted = 0

start-row: specifies the row number (within the character cell) of the top row of pixels to be defined. Valid range is 1 through 15 (1 through 12 on the 4205).

Defaults: Factory = (none)
Omitted = 1

end-row: specifies the row number (within the character cell) of the bottom row of pixels to be defined. Valid range is 1 through 15 (1 through 12 on the 4205).

Defaults: Factory = (none)
Omitted = 15 (12 on the 4205)

start-column: specifies the column number (within the character cell) of the left-most column of pixels to be defined. Valid range is 1 through 8 (1 through 6 on the 4205).

Defaults: Factory = (none)
Omitted = 1

(continued)

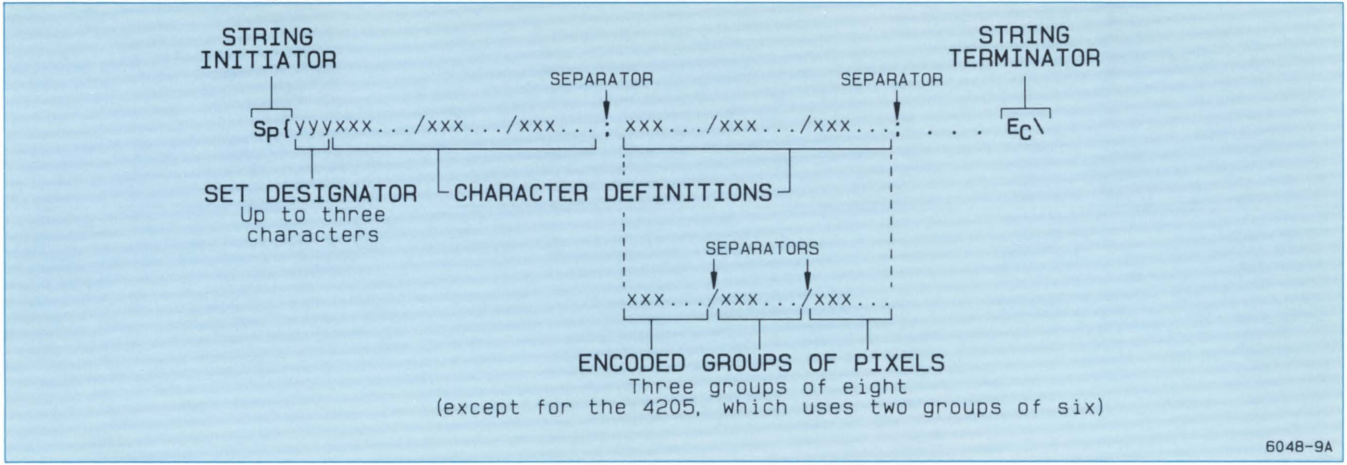

Figure 1. The Syntax for the String of Character Definitions in theTEKDCS Command.

(continued from page 64)

end-column: specifies the column number (within the character cell) of the right-most column of pixels to be defined. Valid range is 1 through 8 (1 through 6 on the 4205).
Defaults: Factory = (none)
Omitted = 8 (6 on the 4205)

set-designator: specifies up to three ASCII characters to be used as the string that designates the character set (in the SCS command). Valid range is SP through / (ADE 32 through 47) for the first two characters (optional), and 0 through ~ (ADE 48 through 126) for the last character (required).
Defaults: Factory = (none)
Omitted = (none)

character-definition: defines a new character; the definition is comprised of up to three substrings of up to eight ASCII characters each; each substring is separated by slashes (/) — see Figure 1 (previous page). Valid range for each character in the substring is ? through ~ (ADE 63 through 126).
Defaults: Factory = (none)
Omitted = (none)

The *set-designator* and *character-definition* parameters are part of the string of character definitions, which is initiated by SP{ and followed by EC\. The only semicolons you use in that string are those to separate each character definition within the string — see Figure 1 (previous page).

Note that the only required parameters are the first two (*set-size* and *starting-position*) and those that are part of the string of character definitions (the string that starts with SP{ and ends with EC\). For how to omit parameters, see *About Omitting ANSI Parameters* at the beginning of the ANSI command descriptions.

Most actions that restore the default character set assignments will delete any downloaded character sets — the exceptions are pressing the Cancel key or issuing the CANCEL command or issuing the LOAD command with the *ENV* file extension.

Refer to this command's description in the Programmers Manual to understand how to define downloadable characters.

Example: EC**P0;92;1;1;10;1;8**SP**{X?KQQ}Q}A/????N?N?**EC\

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
Host (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 the DA command 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 8 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 8 lists the characters sent in Keypad Numeric mode.

Table 8
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 terminal sends the macros rather than the characters listed in this column.

TEKOM (ORIGIN MODE)

Specifies how the terminal interprets cursor addresses in ANSI commands. (Can be saved in nonvolatile memory.)

Setup: **ORIGINMODE** mode

mode: keyword; specifies the way the terminal interprets cursor addresses. Valid values are: *absolute* and *relative*.
Defaults: Factory = relative
Omitted = relative

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.

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

TEKORM (OVERSTRIKE/REPLACE MODE)

Controls how the terminal displays Underscore and Space characters sent to the terminal screen. (Can be saved in nonvolatile memory.)

Setup: **DAMODE** mode

mode: keyword; specifies the way the terminal treats the Space (SP) and Underscore (_) characters. Valid values are: *overstrike* and *replace*.
Defaults: Factory = replace
Omitted = replace

This command is part of the RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

The Tek-style command SET DIALOG AREA WRITING MODE also controls the Space and Underscore characters in the same way as the TEKORM command.

TEKRC (RESTORE CURSOR)

Restores the settings saved with the TEKSC command.

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

If you issue this command without first issuing TEKSC (SAVE CURSOR), this command (1) restores to factory default values those settings saved by TEKSC, and (2) returns the cursor to the home position (Row 1, Column 1 of the dialog buffer).

TEKSC (SAVE CURSOR)

Saves the cursor position and other selected screen editing settings.

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

The TEKRC (RESTORE CURSOR) command restores the saved information.

TEKSCNM (SCREEN MODE)

Specifies whether dialog area colors should be displayed with normal or reversed hue values. (Can be saved in nonvolatile memory.)

Setup: **SCREENMODE** mode

mode: keyword; specifies the way the terminal displays color indices in the dialog area. Valid values are: *normal* and *reverse*.

Defaults: Factory = normal
Omitted = normal

The SGR (SELECT GRAPHICS RENDITION) ANSI command also reverses colors in the dialog area, and in the graphics area as well.

This command is part of the ANSI RM (RESET MODE) and SM (SET MODE) commands — see the SM command description for host syntax.

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**

VT (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}C**H**

CURSOR UP

Moves the cursor up one line without moving it horizontally.

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

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}C**Y** 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 ADE 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 ADE 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.

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}C**Y**″^{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 9).

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

Table 9
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 macros rather than the characters listed in this column are sent.

ENTER ANSI MODE

Places the terminal in ANSI mode.

Host: ^{E}c<

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: ^{E}cF

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: ^{E}cK

The cursor position does not change.

ERASE TO END OF SCREEN

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

Host: ^[cJ

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: ^[c>

Factory default meanings are shown in Table 8 (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: ^[cG

IDENTIFY

Identifies the terminal to the host.

Host: ^[cZ
Report: ^[c/Z

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

REVERSE LINE FEED

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

Host: **ESC I**

SELECT CODE

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

Host: **ESC %!** 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 **ESC %!2**
Setup **CODE EDIT**

SYNTAX MODE

Saves, restores, or reports the host command mode setting.

Host: **ESC #!** operation

operation: integer; valid values are:

0 Reports the host command mode
1 Saves the host command mode
2 Restores the host command mode

Defaults: Factory = (none)
Omitted = Error

This command is recognized in all host command modes.

Example: **ESC #!1**

TEK-STYLE SYNTAX

COMMAND CONVENTIONS

All Tek-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 ^{E}C 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 10 and 11, 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.

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.

If a command doesn't apply to a particular terminal, that exclusion is shown with a special symbol — for example:

If a command requires a particular terminal configuration, that requirement is identified with a phrase in the heading of the command description — for example: *Requires Coax Option*.

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 10.

Figures 2 and 3 are examples of one method of manually encoding host parameters. Refer to the Programmers Manual for other methods, including a bit-packing scheme written in FORTRAN.

Table 10
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 2.)	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 3.)	'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 11
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

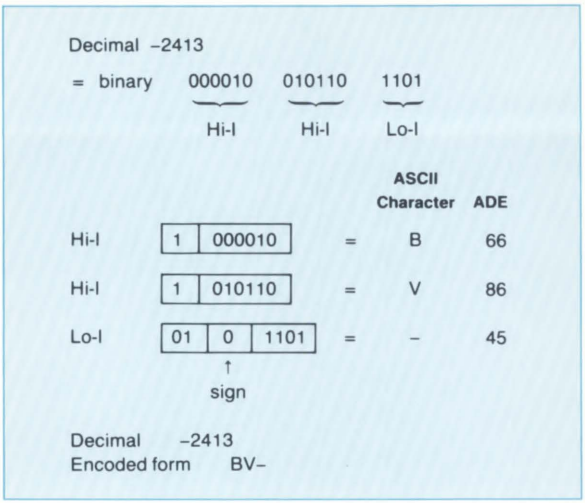

Figure 2. How to Encode Integer Parameters.

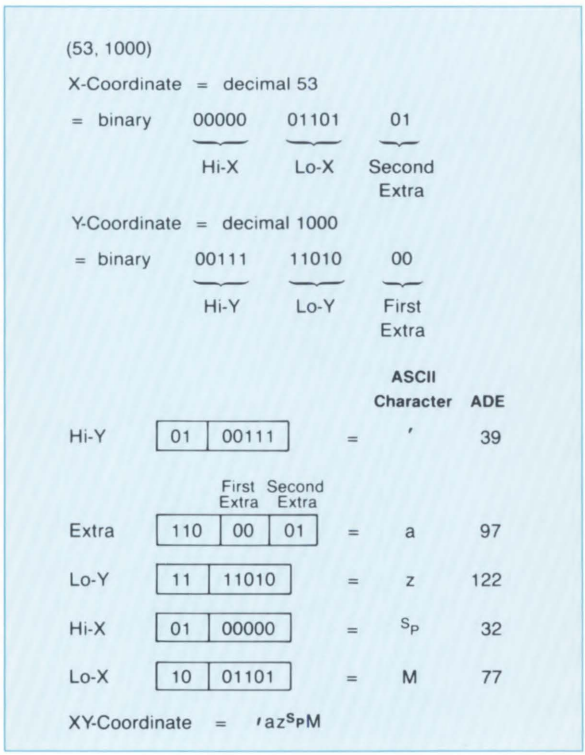

Figure 3. How to Encode XY-Coordinates.

TEK-STYLE COMMANDS

BACKGROUND COPY

Allocates memory for spooling background copies. (Can be saved in nonvolatile memory.)

Setup: **HCBACKGROUND** image-complexity number-of-images

image-complexity: keyword; specifies the complexity of the image to be copied. Valid entries are:

simple	Specifies a simple image requiring up to 25 kilobytes of memory
average	Specifies an average image requiring up to 50 kilobytes of memory
complex	Specifies a complex image requiring up to 100 kilobytes of memory
none	Disables background copying and frees memory

Defaults: Factory = (none)
Omitted = average

number-of-images: integer; specifies the number of different images that can be spooled concurrently. Valid range is 0 through 65535 (maximum depends on how much memory is available).

Defaults: Factory = 1
Omitted = 1

Allocating memory for background copying may cause some application programs to run out of memory. See the description of how the terminal's memory works in Section 4 of the Programmers Manual.

Background copying on a 4205 may be limited, unless it is equipped with the optional megabyte of memory. On a 4205 without the extra memory, you can't use the keyword *COMPLEX*, nor can you specify *AVERAGE 2* or *SIMPLE 4* — these require more memory than is available.

Additionally, depending on how much memory was used to configure the terminal, a 4205 may not have enough memory to support background copying at all. If you are having difficulty using background copying, you might try freeing up memory from other functions and reserve more for background copying, or you might order the optional extra megabyte of memory option (see the Operators Manual).

Example: Setup **HCBACKGROUND AVERAGE,1**

BASE COLOR (Requires Coax Option)

Determines whether the terminal displays information in two or four colors during coax communications. (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 during coax communications, 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: ^{E}c**SN**
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: ^{E}c**SB**
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: ^{E}c**SE** 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 ^{E}c**SEA0**
Setup **SGNEW 16**

BEGIN PANEL BOUNDARY

Starts a panel definition.

Host: $^{E}_{C}$**LP** 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

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

You cannot draw a marker during a panel definition.

Example: Host $^{E}_{C}$**LP** *'az*$^{S}_{P}$**M1**
Setup **BEGINPANEL 53,1000,1**

BEGIN PIXEL OPERATIONS

Sets up the terminal for subsequent pixel operations.

Host: $^{E}_{C}$**RU** 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 **EcRU1<6**
Setup **PXBEGIN 1,12,6**

BEGIN SEGMENT

Begins a new segment definition.

Host: **EcSO** segment-number
Setup: **SGOPEN** 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 is set to the most recently defined pivot point and the Pick ID is set to 1.

Example: Host **EcSOB0**
Setup **SGOPEN 32**

CALL SEGMENT

Calls a segment to be included as a graphics primitive within the currently open segment.

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

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 (none)
Omitted = 0 (none)

The called segment is treated as a graphics primitive within the segment it was called into.

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 the next called segment (Segment -5)
3. The image transform set for all segments not yet defined (Segment -2)

Example: Host **EcSF2 ' azSpM1**
Setup **SGCALL 2,53,1000,MODIFY**

CANCEL

Stops certain terminal operations and disables some terminal modes.

Host: ^{E}c**KC**
Setup: **CANCEL**

Issuing this command:

- Cancels any copy operations initiated by the HARDCOPY command or the SCopy or DCopy keys
- Cancels any background copies currently spooled
- Unlocks the keyboard keys (and mouse buttons)
- Restores both the G0 and G1 character sets to their default set, and shifts in the G0 character set
- Puts the terminal in Alpha mode, and terminates GIN, Vector mode, Marker mode, Bypass mode and Prompt mode
- Flushes input and output queues

This command has the same effect as pressing the Cancel key, except that the Cancel key also cancels any copy operations initiated by the COPY, PLOT, PORT COPY, or SAVE commands. (The Cancel key also terminates Snoopy mode.)

CAPITALS (Requires Coax Option)

Specifies whether the terminal displays alphabetic characters as all uppercase or both uppercase and lowercase during coax communications. (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 during coax communications, and you won't see the effect until you exit Setup.

CLEAR DIALOG SCROLL

Erases the dialog buffer.

Host: $^{E}_{C}$**LZ**
Setup: **CLEARDIALOG**

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

CLICK

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, and Caps Lock.

For key-click during coax communications, use the Click key (during coax communications, the Click key overrides this command's settings).

COPY

Sends data (1) from the host port to the COPIER port or one of the 2PPI ports, or (2) from a 2PPI port to the host port, COPIER port, or the other 2PPI port.

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

(For the 4205, *HO:* is the only valid *source*.)
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: 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

(For the 4205, *HC:* is the only valid *destination*.)

Defaults: Factory = (none)
Omitted = Error

> *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 terminals with the coax option, *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 sent to the terminal screen also implies a $^{L}{}_{F}$. (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

When you begin coax communications on a terminal with the coax option, the IBM 3270-style control unit will override this command setting. To change the cursor during coax communications, use the Alt Cr key.

CX KEYPAD (Requires Coax Option)

Determines whether the numeric keypad transmits numbers or programmed functions during coax communications. (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 during coax communications, and does not take effect until you exit Setup.

DECODE

Displays the decoded value of encoded command or report parameters.

Setup: **DECODE** parameter-type
input-string

parameter-type: keyword. Valid entries are:

int	For an integer parameter
rint	For an integer report parameter of up to three characters
real	For a real parameter
rreal	For a real report parameter
xy	For an xy-coordinate parameter (12-bit)
rxy	For an xy-coordinate report parameter (12-bit)
4010xy	For a 4010 xy-coordinate parameter (10-bit)
r4010xy	For a 4010 xy-coordinate report parameter (10-bit)

Defaults: Factory = (none)
Omitted = Error

input-string: delimited string; specifies the parameter to be decoded. The contents of the string must be valid for the *parameter-type* specified.

Defaults: Factory = (none)
Omitted = Error

If the parameter you want to decode contains spaces, you must include the spaces in the input string. (For one- or two-character integer report parameters, enter them with leading spaces so that there is a total of three characters, counting each space as one character.)

This command doesn't decode (1) real report parameters that represent absolute values less than $1x10^{-63}$, and (2) large integer report parameters.

Example: Setup **DECODE INT,/BV-/**

DEFINE MACRO

Creates or deletes a volatile macro.

Host: **$^{E}_{C}$KD** macro-number
macro-contents
Setup: **DEFINE** macro-number
string

macro-number: integer (key specifier or integer in Setup); specifies the macro to be defined. Valid entries are an integer in the range -230 through 32767 (in Setup or host syntax) or a keypress of any programmable key (Setup only). Specifying *-1* (or the keyword *all* in Setup) deletes all volatile macros.
Defaults: Factory = (none)
Omitted = 0

macro-contents: integer array; defines the macro. Consists of the ADE values of the characters in 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 can consist of any characters available on your keyboard (characters with ADE values in the range 0 through 127). (Setup syntax only.)
Defaults: Factory = (none)
Omitted = Empty string

In Setup, you must precede a $^{C}_{R}$ 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, issue the DEFINE MACRO command with the macro's number, but without a macro definition.

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

Example: Host **$^{E}_{C}$KDH03E8E9E:**
Setup **DEFINE F1,/XYZ/**

DEFINE NONVOLATILE MACRO

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

Host: $^{E}_{C}$**KO** macro-number
macro-contents
Setup: **NVDEFINE** macro-number
string

macro-number: integer (key specifier or integer in Setup); specifies the macro to be defined. Valid entries are an integer in the range -230 through 32767 (in Setup or host syntax) or a keypress of any programmable key (Setup only). Specifying *-1* (or the keyword *all* in Setup) deletes all volatile macros. Nonvolatile macros are saved in (or deleted from) nonvolatile memory only when you follow this command with SAVE NONVOLATILE PARAMETERS.

Defaults: Factory = (none)
Omitted = 0

macro-contents: integer array; defines the macro. Consists of the ADE values of the characters in 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 can consist of any characters available on your keyboard (characters with ADE values in the range 0 through 127). (Setup syntax only.)

Defaults: Factory = (none)
Omitted = Empty string

When defining macros in Setup syntax, any special editing characters (like, $^{C}_{R}$) in the macro definition must be preceded by the *literal character* (see the SET EDIT CHARACTERS command).

To delete a nonvolatile macro, issue this command with the macro's number, but without a macro definition. Then issue the SAVE NONVOLATILE PARAMETERS command.

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

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 $^{E}_{C}$**KOH03E8E9E:**
$^{E}_{C}$**KU**
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 first Pick group to delete. Valid values are:

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

Defaults: Factory = (none)
Omitted = Error

last-Pick-ID: integer; specifies the last Pick group to delete. Valid values are:

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

Defaults: Factory = (none)
Omitted = Error

If you specify a Pick ID that 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.

Use the SET SEGMENT EDIT MODE command to control how the editing affects the position and attributes of the trailing part of the segment.

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

DELETE SEGMENT

Deletes a segment from memory.

Host: **ESCSK** 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 **ESCSKA0**
Setup **SGDELETE 16**

DELETE VIEW

Deletes a view.

Host: **ESCRK** 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 **ESCRKA0**
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 activity

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 = 0

When the terminal receives the DISABLE GIN command, it 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** **'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: **EcUC** curve-type
list-of-points
Setup: **CURVE** curve-type
list-of-points

curve-type: integer; specifies the type of curve to be drawn. Valid entries are:

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 a vector drawn from the last point of the arc to the center of the circle and another 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

Since this 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 **EcUC12+'w#]7' n/T**
Setup **CURVE ARC,500,1500,2000,3000**

DRAW MARKER

Draws a marker at a specified location.

Host: **EcLH** 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 **EcLH 'azSPM**
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 12 summarizes the effects of enabling and disabling the dialog area while in Tek mode.

Table 12
EFFECTS OF ENABLE DIALOG AREA

Feature	Dialog Area Disabled	Dialog Area Enabled
Alphatext	Sent to the current graphics position in the graphics area	Sent to the current alpha cursor position in the dialog area
GEras Key, SEras Key, or PAGE Command	Erases the graphics area (SEras also erases the dialog area) Takes the terminal out of GIN Resets the terminal to line style 0 Sets the graphics position to the home position (0,3071) Puts the terminal in Alpha mode	Erases the graphics area (SEras also erases the dialog area) Sets the alpha cursor position to Row 1, Column 1
^{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

ENABLE GIN

Enables the terminal for graphics input (GIN).

Host: **EcIE** enable-code
number-of-GIN-reports

Setup: **GINENABLE** enable-code
number-of-GIN-reports

enable-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 13 and 14 list all valid *enable-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

> *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 an *enable-code* from Table 13, reports are sent only in response to key-presses. If you use an *enable-code* from Table 14, 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 rubber-banding for that device.

When you use the keyboard 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**

Table 13
ENABLE-CODES FOR KEY-PRESS GIN
(Same as Device-Function-Codes)

Device[a]	Function		
	Locate	Pick	Stroke
Keyboard	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
Mouse	64	65	66

[a] **The only valid devices for the 4205 are the keyboard and mouse.**

Table 14
ENABLE-CODES FOR KEY-PRESS-AND-RELEASE GIN
(4957 and 4958 Graphics Tablets Only)

Device[a]	Function		
	Locate	Pick	Stroke
Keyboard	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
Mouse[b]	Not valid	Not valid	Not valid

[a] **The only valid devices for the 4205 are the keyboard and mouse.**

[b] **Although you can't specify key-release GIN for the mouse, you can program key-release macros to generate GIN reports when the mouse buttons are released.**

ENABLE KEY EXPANSION

Specifies whether key macros can be expanded from the keyboard.

Host: ^{E_C}**KW** 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 (and mouse buttons) 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 4010 GIN.

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.*

ENCODE

Displays the encoded value of a parameter to be used in a host syntax command.

Setup: **ENCODE** parameter-type
input-string

parameter-type: keyword. Valid entries are:

int	For an integer parameter
real	For a real parameter
xy	For an xy-coordinate (12-bit)
4010xy	For a 4010 xy-coordinate (10-bit)

Defaults: Factory = (none)
Omitted = Error

input-string: delimited string; specifies the parameter value to be encoded. Valid values are shown in Table 15.

Defaults: Factory = (none)
Omitted = Error

When the terminal displays the decoded value, it delimits it with backslashes (\ ) so you can see any spaces that you must include when you issue the parameter.

When the *input-string* is an xy-coordinate parameter, you must enter the x-coordinate, a space, and the y-coordinate.

Example: Setup **ENCODE XY,/53 1000/**

Table 15
THE ENCODE COMMAND PARAMETER VALUES

Parameter Type	Keyword	Valid Values
Integer	int	-32768 — 65535
Real[a]	real	-32768.0 — 32767.0
XY-Coordinate	xy	0,0 — 4095,4095
4010 XY-Coordinate	4010xy	0,0 — 1023,1023

[a] **ENCODE can't display values for real parameters with more than five significant digits or more than 63 characters to the right of the decimal point.**

END GRAPHTEXT CHARACTER

Ends a graphtext character definition.

Host: $^{E}_{C}$**SU**
Setup: **GTEND**

END PANEL

Ends a panel definition.

Host: $^{E}_{C}$**LE**
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: $^{E}_{C}$**SC**
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 is valid in all host command modes. The only time the terminal cannot respond to this command is when it is in Local mode.

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.

The terminal cannot enter Vector mode from Marker mode — instead, put the terminal in Alpha mode ($^{U}_{S}$), then Vector mode ($^{G}_{S}$).

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 enter Vector mode from Marker mode — instead, put the terminal in Alpha mode ($^{U}_{S}$), then Vector mode ($^{G}_{S}$).

EXPAND MACRO

Expands a macro.

Host: $^{E}_{C}$**KX** macro-number
Setup: **EXPAND** macro-number

macro-number: integer (key specifier or integer in Setup); specifies which macro to expand. Valid entries are either (1) an integer in the range –230 through –2 and 0 through 32767 (in Setup or host syntax), or (2) a key-press of any programmable key (Setup only).
Defaults: Factory = (none)
Omitted = 0

Example: Host $^{E}_{C}$**KXH0**
Setup **EXPAND 128**

FACTORY

Sets all parameters to their factory default values.

Setup: **FACTORY**

This command restores the terminal to its factory default condition. It erases the contents of the terminal's standard and extended memory (including all changes in parameter settings, all macro definitions, and any downloaded character sets in character memory), and takes the terminal out of Setup.

Issuing the FACTORY command resets all communication settings, and thus may interrupt communications with the host. If you're logged on to an IBM host when you issue this command, the terminal will log you off.

GRAPHIC TEXT

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

Host: $^{E}_{C}$**LT** 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 ($^{S}_{P}$ through ~).
Defaults: Factory = (none)
Omitted = Empty string

Example: Host $^{E}_{C}$**LT7UNICORN**
Setup **GTEXT /UNICORN/**

HARDCOPY

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

Host: **ᴱcKH** 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 SCopy, Ctrl with SCopy, or DCopy keys (*hardcopy-codes 0* or *1, 2,* and *3,* respectively).

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 SCopy key).

Example: Host **ᴱcKH3**

HARDCOPY STATISTICS

Displays (1) how much terminal memory was used for the most recent background copy, and (2) the number of background copies currently spooled in memory.

Setup: **HCSTATISTICS**

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 (Requires Coax Option)

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 begins coax communications with an IBM host. This communication occurs in CUT mode if the terminal is configured for CUT mode or in DFT mode if the terminal is configured for DFT mode. (The DFT session is either the most recently selected session or, if the terminal has just been powered up, Session A.)

When the terminal enters coax communications, the terminal:

- Enables the dialog area and makes it visible
- Sets the dialog area to 32 lines with 80 columns (for the 4205, 28 lines and 80 columns)
- Creates a two-line operator information area at the bottom of the dialog area
- Sets the dialog area buffer to 32 lines (for the 4205, 28 lines)
- Sets the first and second alpha cursor indices to 1 and 0, respectively
- Turns local echo off
- Sets Origin mode to Absolute
- Sets the top margin to 1 and the bottom margin to the current value of SET DIALOG AREA LINES

When you issue *HOSTPORT RS-232*, the terminal configures itself using the most recently issued settings, including those settings made during coax communications that affect RS-232 communications.

Using the Shift-Jump key combination toggles the terminal between HOSTPORT RS232 and HOSTPORT COAX.

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 accepts ^{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 a segment so primitives and primitive attributes can be added.

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)

Use the SET SEGMENT EDIT MODE command to control how the editing affects the primitive attributes and position of the trailing part of the segment.

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 (1) resetting or turning off the terminal or (2) issuing the FACTORY or RESET command.

LFCR

Specifies whether a ^{L}F character sent to the terminal screen 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)

LOAD

Either (1) restores the previously saved command settings that make up the terminal environment, or (2) restores all terminal settings (except critical communications settings) to factory default values.

Host: **^{E}cJL** pseudofile-specifier

Setup: **LOAD** pseudofile-specifier

pseudofile-specifier: string; specifies whether the terminal environment will be restored to previously saved values or restored to factory default values. Valid entries are:

M*n*:ENV	Restores the terminal environment previously saved in pseudofile *Mn:ENV*
M*n*:DEF	Restores the terminal environment to factory default values (except critical communications settings)

Defaults: Factory = (none)
Omitted = Error

In the *pseudofile-specifier, n* is an integer in the range 0 through 9.

When you load pseudofile *Mn:ENV,* the terminal:

- Loads the saved command settings (listed in *Commands Saved in an Environment* at the beginning of this guide)
- Executes a CANCEL command
- Deletes all segments and views
- Deletes all volatile macros
- Refreshes the graphics area

When you load pseudofile *Mn:DEF,* the terminal returns all reportable command settings to their default value except: baud rate, flagging mode, parity, queue size, stop bits, and Snoopy mode.

If this command fails during execution because of a memory error, the terminal's parameters will be in an unpredictable state.

Example: Host **^{E}cJL6M1:ENV**
Setup **LOAD M1:ENV**

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 keys (and mouse buttons).

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 (F1 — F5) 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 (key specifier or integer in Setup); specifies the macro to be displayed. Valid entries are an integer in the range -230 through 32767 (in Setup or host syntax) or a key-press of any programmed key (Setup only). Specifying *-1* (or the keyword *all* in Setup) displays all macros.

Defaults: Factory = (none)
Omitted = 0

MAP INDEX TO PEN

4205

Assigns a color index to a plotter pen.

Host: **ESC PI** 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. Valid entries are:

P0: PORT 0
P1: PORT 1

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 **ESC PI3P0:52**
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: **ESC QI** 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 **ESC QI42040**
Setup **HCMAP 2,0,4,0**

MAP MOUSE TO JOYDISK

Allows the mouse and the keyboard to be used as the GIN device in older applications.

Setup: **MOUSEMAP** mode

mode: keyword; determines whether the mouse can be used in conjunction with the keyboard as GIN Device 0. Valid entries are:

no	Specifies Device 0 to be the keyboard
yes	Specifies Device 0 to be the mouse/keyboard combination

Defaults: Factory = no
Omitted = yes

This command must be issued prior to running the application, and should only be used if an application does not already utilize the mouse — if the mouse is mapped to Device 0 (normally, just the keyboard) but the application expects the mouse to be Device 8, unexpected results can occur.

Any GIN command for Device 8 will cancel the effects of this command.

We don't recommend using the Joydisk for cursor movement when this command is in effect.

The purpose of this command is to provide compatibility with older applications that do not utilize the mouse. If you develop an application for 4200 Series Terminals and want to use the mouse for GIN, make sure that your application recognizes the mouse as a GIN device.

MOVE

Moves the graphics position without drawing a vector.

Host: **ESC LF** 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 **ESC LF ' a z SP M**
Setup **MOVE 53,1000**

PAGE

Renews the current view.

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

This command has the same effect as pressing the terminal's GEras key, which renews the current view.

If the dialog area is not enabled, the terminal also:

- 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. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)

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

first-source-corner: xy-coordinate; specifies any corner of a rectangular region on the current pixel surface. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)

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

second-source-corner: xy-coordinate; specifies the corner opposite the *first-source-corner*. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)

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

Example: Host **EcRX1"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 one of the 2PPI ports.

Host: **EcPL** separator
destination
Setup: **PLOT** separator
destination

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: 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

(For the 4205, *HO:* is the only valid *destination*.)

Defaults: Factory = (none)
Omitted = Error

Example: Host **EcPL2TO3P0:**
Setup **PLOT TO,P0:**

PORT ASSIGN

4205

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 4510A 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 or 4958 Graphics Tablets.

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

TEK

PORT COPY

4205

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

Host: ^{E}c**PC** source
separator
destination

Setup: **PCOPY** source
separator
destination

source: 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: 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 the *source* or *destination* device can terminate the data transfer by sending its EOF string to the terminal; 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}c**PC3P1:2TO3HO:**
Setup **PCOPY P1:,TO,HO:**

PROMPT MODE

Turns Prompt mode on or off.

Host: $^{E}_{C}$**NM** 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)

You can issue this command during coax communications without affecting the data passing over the coax cable. However, the terminal will be in Prompt mode as soon as you shift to RS-232 communications.

RASTER WRITE

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

Host: $^{E}_{C}$**RP** 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 $^{S}_{P}$ through ` (ADE 32 through 96).
Defaults: Factory = (none)
Omitted = 0

You must encode this command with a bit packing scheme. Figures 4 and 5 show two examples of the bit packing scheme, and the Programmers Manual contains an algorithm for bit packing (in Section 4).

Example: Host $^{E}_{C}$**RP99222333222**
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:

0	0	2	3	2	7
↓	↓	↓	↓	↓	↓
000	000	010	011	010	111

Group the binary bits into six-bit groups:

000 000	010 011	010 111
↓	↓	↓
000000	010011	010111

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

0100000	0110011	0110111
↓	↓	↓
S_P	3	7

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**.

Host: E**cRP63**S_P**37**
Setup: **PXRASTERWRITE 6,**S_P**37**

Figure 4. 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:

0	0	2	3	12	15
↓	↓	↓	↓	↓	↓
0000	0000	0010	0011	1100	1111

Group the binary bits into six-bit groups:

0000 0000	0010 0011	1100 1111
↓	↓	↓
000000	000010	001111	001111

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

0100000	0100010	0101111	0101111
↓	↓	↓	↓
S_P	"	/	/

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 /.

Host: E**cRP64**S_P**"//**
Setup: **PXRASTERWRITE 6,**S_P**"//**

Figure 5. 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 graphics memory. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)
Defaults: Factory = (none)
Omitted = 0,0

upper-right-corner: xy-coordinate; specifies the opposite corner of the rectangle. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)
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 graphics 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.

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)

When the terminal redraws the segments in the view, it also redraws the border (if it's visible) and the framing box (if Zoom/Pan is enabled).

The Cancel key terminates the process of renewing a view — whether initiated by the GEras or SEras key or the RENEW VIEW command.

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

REPLACE PART OF SEGMENT

Deletes Pick groups from a segment and leaves it open so primitives and primitive attributes can be added.

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

If a Pick ID you specify occurs more than once in a segment, the terminal selects the first occurrence of that Pick ID.

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.

Use the SET SEGMENT EDIT MODE command to control how the editing affects the primitive attributes and position of the trailing part of the segment.

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

REPORT DEVICE STATUS

Queries the terminal for a Device Status Report.

Host: $^{E}_{C}$**JQ** 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

(For the 4205, *HC:* is the only valid *device-specifier*.)

Defaults: Factory = (none)
Omitted = Error

The REPORT DEVICE STATUS command can't detect whether a Hewlett-Packard LaserJet is busy, and the Device Status Report will always return a *1* (meaning just that the interface is present) — it will never report that the LaserJet is busy, even if it is.

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

REPORT ERRORS

Queries the terminal for an Error Report.

Host: $^{E}_{C}$**KQ**

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

REPORT GIN POINT

Queries the terminal for a Locate, Pick, or Stroke Report.

Host: ^{E}c**IP** device-function-code

device-function-code: integer; identifies a GIN device and function combination. Valid values are those listed in Table 16 under the ENABLE GIN command and *–2*, which 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 16
DEVICE-FUNCTION CODES

Device[a]	Function		
	Locate	Pick	Stroke
Keyboard	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
Mouse	64	65	66

[a] **The only valid devices for the 4205 are the keyboard and the mouse.**

REPORT PORT STATUS

4205

Queries the terminal for a Port Status Report.

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

Queries the terminal for a Segment Status Report.

Host: **ESCSQ** segment-number
status-codes

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

–5	The segment called in the next CALL SEGMENT command
–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
I	Image transform
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.

Example: Host **ESCSQ32PV**

REPORT TERMINAL SETTINGS

Queries the terminal for a Terminal Settings Report.

Host: ^{E}c**IQ** 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 standard memory available and the largest contiguous block of standard memory (both reported as a number of 16-byte units of memory)
?P	Reports total extended memory available and the largest contiguous block of extended memory (both reported as a number of 16-byte units of memory) [1]
?T	Reports the terminal model number or the number specified by the last SET TERMINAL MODEL command
00	Reports the firmware version installed in the terminal
99	Reports the level number of the firmware version installed in the terminal

Example: Host ^{E}c**IQLL**

REPORT 4010 STATUS

Queries the terminal for a 4010 Status Report.

Host: ^{E}c^{E}Q

When the terminal sends the 4010 Status Report, it also terminates 4010 GIN and puts the terminal in Alpha mode.

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

[1] **To query for extended memory availability, you must issue SET COORDINATE MODE so the terminal can report large integers.**

RESET

Returns the terminal to its power-up condition.

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

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

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.

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

When a terminal with the coax option receives a RESET command during coax communications, 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 graphics 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 $\times$ 2^{n}**) + color-index**
where n = bits-per-pixel

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

SAVE

Either sends (1) a segment definition to the host port or to one of the 2PPI ports, or (2) sends the terminal environment to the host port or to the terminal's memory.

Host: **ᴱCJV** object-saved
object-number
separator
destination

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

object-saved: string; specifies the type of object to be saved. Valid entries are:

SEG Saves a segment definition
ENV Saves a terminal environment

Defaults: Factory = (none)
Omitted = Error

object-number: integer; specifies the specific object or class of objects to be saved. Must be one of the following:

–4	Saves all segments in the current view (valid only if *object-saved* is *SEG*)
–3	Saves all segments that match the current matching class (valid only if *object-saved* is *SEG*)
–1	If *object-saved* is *SEG*, saves all segments; if *object-saved* is *ENV*, saves the command settings that make up the terminal environment
0	Deletes the specified pseudofile (valid only if *object-saved* is *ENV*)
1 — 32767	Saves an individual segment (valid only if *object-saved* is *SEG*)

Defaults: Factory = (none)
Omitted = Error JV21

separator: string; separates the *object-number* and *destination-device* parameters. Must be the string *TO* (in uppercase or lowercase). May be an empty string in host syntax or omitted in Setup syntax.

Defaults: Factory = (none)
Omitted = Error

destination-device: string; specifies the device to which the segment definition or environment will be sent. Valid entries are:

HO:	Sends data to the host port
M*n*:	Sends data to pseudofile *n* in extended memory (*n* must be an integer in the range 0 through 9)
P0:	Sends data to PORT 0
P1:	Sends data to PORT 1

(For the 4205, *H0:* and *Mn:* are the only valid *destination-devices*.)

Defaults: Factory = (none)
Omitted = Error

Refer to the list *Commands Saved in an Environment*, which is the last of the cross-reference lists at the beginning of this reference guide.

The Programmers Manual explains in detail how to use this command to save segment definitions and terminal environments.

Example: Host **ECJV3SEG!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: **ECKU**
Setup: **NVSAVE**

This command saves only those settings that have changed since the last time this command was issued. The only macros that it saves are those defined with the DEFINE NONVOLATILE MACRO and LEARN NONVOLATILE commands.

SELECT CODE

Selects the host command mode — ANSI, EDIT, VT52, or TEK. (Can be saved in nonvolatile memory.)

Host: **EC%!** 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: $^{E}_{C}$**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 is valid only for 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: $^{E}_{C}$**MP** 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

The inside back cover shows the terminal's predefined fill patterns and the numbers used to specify them.

Example: Host $^{E}_{C}$**MPA0**
Setup **FILLPATTERN 16**

SELECT HARDCOPY INTERFACE

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

Host: $^{E}_{C}$**QD** copier-type

Setup: **HCINTERFACE** copier-type

copier-type: integer; identifies which copier is connected and to which port. Valid entries are:

0	A Centronics-type monochrome text printer connected to the COPIER port
1 or 2	A Tektronix 4691, 4692, 4695, Color Graphics Copier or 4696 Color Ink Jet Printer connected to the COPIER port
3	A Tektronix 4644 Dot Matrix Printer (or other Centronics-type printer with Epson FX-80 graphics protocol) connected to the COPIER port
4	A Hewlett-Packard ThinkJet connected to the COPIER port
5	A Hewlett-Packard LaserJet connected to PORT 0
6	A Hewlett-Packard LaserJet connected to PORT 1

(For the 4205, all of the hardcopy devices listed are valid except the LaserJet.)

Defaults: Factory = 2
Omitted = 0

This command affects all copies except those requested with the COPY command, which requires that your application structure the data.

Example: Host $^{E}_{C}$**QD2**
Setup **HCINTERFACE 2**

SELECT VIEW

Specifies which view will be the current view.

Host: ^{E}c**RC** 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

Example: Host ^{E}c**RCC0**
Setup **VSELECT 48**

SET ALPHA CURSOR INDICES

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

Host: ^{E}c**TD** 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

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.

You can create a blinking cursor by assigning a *second-index* that is different from the *first-index*.

You can issue this command during coax communications, but the alpha cursor won't change until you shift to RS-232 communications.

Example: Host ^{E}c**TD36**
Setup **ACURSOR 3,6**

SET ALPHATEXT FONT

Invokes either the G0 (primary) or G1 (alternate) character set for displaying alphatext and string-precision graphtext.

Host: ESC font-code

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

SI The G0 character set
SO The G1 character set

Defaults: Factory = G0 character set
Omitted = (none)

Use the ANSI command SCS (SELECT CHARACTER SET) to designate which character sets are assigned to G0 and G1.

The SET ALPHATEXT FONT command does not control the character set displayed in Setup.

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 answerback string should be saved in nonvolatile memory — issue the SAVE NONVOLATILE PARAMETERS command after issuing this command.

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

SET BACKGROUND COLOR

Sets the color of the background surface.

Host: ^{E}c**TB** 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're using the subtractive overlay mode (specified with the SET COLOR MODE command), you should choose white (or some other light color) as the background color.

Example: Host ^{E}c**TBG8C2F4**
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: **ESC MB** 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

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.

Since the SET BACKGROUND INDICES and SET GRAPHICS AREA WRITING MODE commands both affect how alphatext is displayed in the graphics area, each of these commands supersedes the effect of the other.

Example: Host **ESC MB0!**
Setup **BACKINDEX 0,–1**

SET BAUD RATES

Sets the terminal's transmit and receive baud rates. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**NR** 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.

You can issue this command during coax communications without affecting coax communications. The new baud rate selection will immediately take effect for RS-232 communications.

Example: Host $^{E}_{C}$**NRe8R<**
Setup **BAUDRATE 600,300**

SET BELL TYPE

Controls whether the terminal bell rings continuously or emits separate tones in response to a series of $^{B}{}_{L}$ (Bell) characters from the host. (Can be saved in nonvolatile memory.)

Setup: **BELLTYPE** bell-type

bell-type: keyword. Valid entries are:

continuous	Specifies a continuous tone
discrete	Specifies separate tones

Defaults: Factory = continuous
Omitted = continuous

SET BELL VOLUME

Turns the terminal bell on and off and controls the bell volume. (Can be saved in nonvolatile memory.)

Setup: **BELLVOLUME** bell-volume

bell-volume: keyword. Valid entries are:

off	Turns the bell off
low	Specifies low volume
medium	Specifies medium volume
high	Specifies high volume

Defaults: Factory = medium
Omitted = medium

SET BORDER VISIBILITY

Controls the visibility of the border drawn around the current view's viewport.

Host: $^{E}{}_{C}$**RE** 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: $^{E}_{C}$**NK** 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

You can issue this command during coax communications, but the new break time setting will not take effect until you shift to RS-232 communications. (This command does not affect coax communications.)

Example: Host $^{E}_{C}$**NKA9**
Setup **BREAKTIME 25**

SET BYPASS CANCEL CHARACTER

Specifies the character that cancels Bypass mode. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**NU** 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 echoes, 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.

The bypass cancel character has no effect during coax communications.

Example: Host $^{E}_{C}$**NU:**
Setup **BYPASSCANCEL 10**

SET COLOR COPIER DATA RESOLUTION

Controls how precisely the colors transmitted to the 4692 Copier match the colors displayed on the screen. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**QB** 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 primary color (red, green, blue), permitting the 4692 to print 64 distinct colors.

Two-byte color resolution uses four bits of color information for each primary 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 $^{E}_{C}$**QB2**
Setup **HCDATARES 2**

SET COLOR COPIER REPAINT

Specifies the number of times the terminal transmits an image to the 4692 Copier in the course of making a single copy. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**QT** 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

Example: Host $^{E}_{C}$**QT4**
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
Omitted = 0

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
Omitted = 0

gray-mode: integer; valid values are *0* and *1* (both specify color operation). This parameter is included for compatibility with other Tektronix terminals.

Defaults: Factory = 1
Omitted = 0

The HLS color cone is illustrated on the inside front cover of this guide.

Example: Host **ESC TM131**
Setup **CMODE 1,3,1**

SET COORDINATE MODE

Specifies the number of characters that the terminal sends to the host in an integer report.

Host: **ESC UX** coordinate-mode
integer-report-size

Setup: **COORDINATEMODE** coordinate-mode
integer-report-size

coordinate-mode: integer; unused; must be *0*. This parameter is included for compatibility with other Tektronix terminals.
Defaults: Factory = 0
Omitted = Error

integer-report-size: integer; specifies the number of characters transmitted in subsequent integer reports. Valid values are 2 through 6 (as shown in Table 17), and *0*, which specifies no change.
Defaults: Factory = 3
Omitted = Error

Use this command to query for memory availability on a terminal with the optional megabyte of memory. The Terminal Settings Report for this query will require a four-character integer report.

You should ensure that the integer report size is reset to its default value when your program terminates.

See the Programmers Manual for an algorithm that decodes large integer reports.

Example: Host **ESC UX04**
Setup **COORDINATEMODE 0,4**

Table 17
REPORT FORMATS SELECTED WITH THE SET COORDINATE MODE COMMAND

Report Size[a]	Report Format	Range of Integer Values Reported
2	HiI LoI	±1,023
3	HiI HiI LoI	±65,535
4	HiI HiI HiI LoI	±4,194,303
5	HiI HiI HiI HiI LoI	±268,435,455
6	HiI HiI HiI HiI HiI LoI	±2,147,483,647

[a] There's no need to use any report size other than three characters (the default) or four characters. There are no reportable values large enough to require five- or six-character reports.

SET COPY SIZE

Selects a standard or reduced image for copies. (Can be saved in nonvolatile memory.)

Host: **ᴱcQA** 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

On the 4695 and 4696, this command controls the size of both screen copies and dialog copies. On the 4691 and 4692, it controls the size of dialog copies only.

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 **ᴱcQA1**
Setup **HCSIZE 1**

SET CURRENT MATCHING CLASS

Establishes the inclusion and exclusion sets used in matching operations.

Host: **ᴱcSL** 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 **ᴱcSL2=>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.

If you're using arcs in a segment definition, keep in mind that a smooth arc takes more 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: ^cLB number-of-lines
Setup: **DABUFFER** number-of-lines

number-of-lines: integer. Valid range is 2 though 32767.
Defaults: Factory = 49 (32 in coax)
Omitted = Error (28 in coax for the 4205)

If you make the dialog area buffer smaller than the dialog area, the terminal shrinks the dialog area to match the buffer.

You can issue this command during coax communications, but you will not see any change to the buffer size until you shift to RS-232 communications. The dialog area buffer is always set to 32 lines during coax communications.

Example: Host ^cLBA>
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 18
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 (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 18
DEFAULT DIALOG AREA COLOR MIXTURES

Color Index	Color Mixture	Color Mode[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	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] **Use the SET COLOR MODE command to choose a color mode:**
HLS: H = hue, L = lightness, S = saturation
RGB: R = red, G = green, B = blue
CMY: C = cyan, M = magenta, Y = yellow

SET DIALOG AREA HARDCOPY ATTRIBUTES

Specifies the number of pages to be copied, the starting page, and how Form Feed characters are interpreted. (Can be saved in nonvolatile memory.)

Host: ^[C]QL 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 to 32767 (0 means no change from the last setting).

Defaults: Factory = 1
Omitted = 0

page-origin: integer; specifies the copy's starting point. Valid entries are:

0 First 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) characters in the dialog buffer. Valid entries are:

0 Ignores ^[F] characters (pages according to values set with SET HARDCOPY FEATURES)
1 Pages at ^[F] characters as well as at the values set with SET HARDCOPY FEATURES
2 Pages only at ^[F] characters (and ignores values set with SET HARDCOPY FEATURES)

Defaults: Factory = 0
Omitted = 0

The page length is determined by the SET HARDCOPY FEATURES command (the default values are three lines each for the top and bottom margin and 60 lines of text).

Example: Host ^[C]QL211
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 (values greater than 7 default to *7*).

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 (values greater than 7 default to *7*, and *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 (values greater than 7 default to *7*, and *0* specifies transparent).

Defaults: Factory = 0
Omitted = 0

The SET DIALOG AREA COLOR MAP command defines the color mixture for each index.

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 32767. Values greater than 32 default to *32* (for the 4205, values greater than 30 default to *30*).

Defaults: Factory = 32 (in both RS-232 and coax)
(30 in RS-232 and 28 in coax for the 4205)
Omitted = Error

If you make the dialog area larger than the dialog buffer (assuming both are less than the largest allowable dialog area setting), the terminal expands the dialog buffer to be as large as the dialog area.

(On the 4208, if Column mode is set to 132, the maximum number of dialog area lines is reduced from 32 to 30.)

Example: Host $^{E}_{C}$**LL?**
Setup **DALINES 15**

SET DIALOG AREA VISIBILITY

Specifies whether 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)

You can control dialog area visibility from the keyboard by pressing 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.

You can issue this command during coax communications, but you won't see the result until you shift to RS-232 communications and enter data. (The SET ECHO command does not affect data passing over the coax cable.)

[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 while in Setup. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**KZ** character-delete
line-delete
literal

Setup: **EDITCHARS** character-delete
line-delete
literal

character-delete: integer (key specifier or small integer in Setup); specifies (by ADE or keystroke) the key that erases the character to the left of the cursor. Valid values are characters in the range ADE 0 through 127 ($^{N}_{U}$ through $^{D}_{T}$).
Defaults: Factory = 127 ($^{D}_{T}$ — the Rub Out key)
Omitted = Unchanged

line-delete: integer (key specifier or small integer in Setup); specifies (by ADE or keystroke) the key used in Setup to delete the current line. Valid values are characters in the range ADE 0 through 127 ($^{N}_{U}$ through $^{D}_{T}$).
Defaults: Factory = 24 ($^{C}_{N}$ —the Ctrl-X key combination)
Omitted = Unchanged

literal: integer (key specifier or small integer in Setup); specifies (by ADE or keystroke) the character used just before an editing character to suspend its control action and print it as text. Valid values are characters in the range ADE 0 through 127 ($^{N}_{U}$ through $^{D}_{T}$).
Defaults: Factory = 126 (~)
Omitted = Unchanged

Example: Host $^{E}_{C}$**KZG?A8G>**
Setup **EDITCHARS** **Back Space** **,?,#**

SET EOF STRING

Specifies the terminal's end-of-file string. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**NE** 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 $^{E}_{C}$**NE3E8E9E:**
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 displayed on the terminal screen.

Host: $^{E}_{C}$**KT** 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 does not affect which errors are reported to the host.

SET FIXUP LEVEL

Specifies what actions refresh the current view.

Host: ^E^C**RF** 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 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 DC1/DC3 flagging, users can use the Ctrl-S and Ctrl-Q key combinations to stop and start output from the host.

You can issue this command during coax communications. It won't affect coax communications, but the new flagging selection will take effect immediately for RS-232 communications.

SET GIN AREA

Defines a GIN area and maps it into terminal space.

Host: **ESC IV** 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 19 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. For the tablet enabled as an absolute device, x and y must each be 0 through 4095 (for all other devices, must be left at default).

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. For the tablet enabled as an absolute device, x and y must each be 0 through 4095 (for all other devices, must be left at default).

Defaults: Factory = 4095,4095
Omitted = 4095,4095

Example: Host ESC IV 80 SP py SP Y " DT y # W
Setup **GINAREA 8,0,100,100,479,359**

Table 19
DEVICE-FUNCTION CODES

Device[a]	Function		
	Locate	Pick	Stroke
Keyboard	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
Mouse	64	65	66

[a] **The only valid devices for the 4205 are the keyboard and the mouse.**

SET GIN CURSOR

Selects a segment for use as the GIN cursor.

Host: $^{E}_{C}$**IC** device-function-code
segment-number

Setup: **GINCURSOR** device-function-code
segment-number

device-function-code: integer; identifies a device and function combination. See Table 19 (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 = 0
Omitted = 0

When you use a segment as the GIN cursor, it becomes visible in the current view and is displayed in XOR mode (see SET SEGMENT WRITING MODE). The segment is also not detectable in a Pick operation. When you disable GIN, these attributes are restored to their originally specified values.

We recommend that you use only a simple segment as the GIN cursor and that you avoid highlighting it. (A complex segment takes longer to draw and flickers as it moves across the screen.)

Example: Host $^{E}_{C}$**IC8?**
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: $^{E}_{C}$**TC** 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 20 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 20 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 20 for each mode's valid range.

Defaults: Factory = 0
Omitted = 0

Example: Host $^{E}_{C}$**TCK4C2F4**
Setup **GCURSOR 180,50,100**

Table 20
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 Joydisk moves the GIN cursor across the screen. (Can be saved in nonvolatile memory.)

Host: **EcIJ** normal-speed
composite-speed

Setup: **GSPEED** normal-speed
composite-speed

normal-speed: integer; determines the speed of the cursor when the Joydisk is pressed with normal pressure. Valid range is 0 through 65535 (values greater than 12 default to 12, and 0 defaults to 1).

Defaults: Factory = 4
Omitted = 1

composite-speed: integer; determines the speed of the cursor when (1) the Joydisk is pressed with more-than-normal pressure and (2) when the Shift key and Joydisk are pressed simultaneously. Valid range is 0 through 65535 (values greater than 156 default to 156, and 0 defaults to 1).

Defaults: Factory = 8
Omitted = 1

If you specify a *composite-speed* in the range 1 through 12, the terminal uses that speed for both the high-pressure speed and the shifted speed. To specify different high-pressure and shifted speeds, specify a *composite-speed* in the range 13 through 156. Use this algorithm to calculate the *composite-speed* parameter value:

composite-speed = shifted-speed + (12 × high-pressure speed)

Example: Host: **EcIJ4I8**
Setup: **GSPEED 4,152**

SET GIN DISPLAY START POINT

Specifies the initial point for GIN inking and GIN rubberbanding.

Host: **ESC IX** device-function-code
start-point
Setup: **GINSTARTPOINT** device-function-code
start-point

device-function-code: integer; identifies a device and function combination. See Table 19 (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 **ESC IX9 ' az SP M**
Setup **GINSTARTPOINT 8,53,1000**

SET GIN GRIDDING

Defines an invisible grid for Locate and Pick operations, constraining the GIN cursor to points on the grid.

Host: **ESC IG** 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 19 (under SET GIN AREA) are valid except *10, 18,* and *66.*
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 **ESCIG8A9A9**
Setup **GINGRIDDING 8,25,25**

SET GIN INKING

Turns inking on or off for Locate and Stroke operations.

Host: **ESCII** 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 19 (under SET GIN AREA) are valid.
Defaults: Factory = 0
Omitted = 0

inking-mode: integer; selects an inking operation. Must be one of the following:

0 Disables inking
1 Draws a line between each Locate or Stroke point, starting from the next point the user inputs
2 Draws a line between each Locate or Stroke point, starting from the GIN display start-point

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 **ESCII82**
Setup **GININKING 8,2**

SET GIN RATES

Specifies the scaling factors the terminal uses to translate movement of relative GIN devices to GIN cursor movement.

Host: **^{E}cIU** rate-array
Setup: **GINRATES** rate-array

rate-array: integer array; specifies how the terminal translates a particular GIN device's movement into GIN cursor movement. The array consists of the *device-code* (valid values shown in Table 21), the *subdevice-code* (only valid value is *0* — included for compatibility with other Tektronix terminals), and up to eight *GIN-rates* (valid range is 1 through 4095).

Defaults: Factory = See Table 22
Omitted = Error

If you specify a GIN device and subdevice but omit GIN rates, the terminal resets the rates to the factory default values.

If you enter fewer than eight GIN rates, the terminal will repeat the last integer entered to fill out the table.

Example: Host **^{E}cIU:80A0B0C0D0E0F0G0H0**
Setup **GINRATES 8,0,16,32,48,64,80,96,112,128**

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Table 21
DEVICE CODES FOR SET GIN RATES

Device[a]	Device Code
Tablet PORT 0 (Relative)	6
Tablet PORT 1 (Relative)	7
Mouse	8

[a] For the 4205, the only valid device is the mouse.

Table 22
DEFAULT SETTINGS FOR SET GIN RATES (Scale Factor 4)

User Input (GIN Device Movement in GIN Units)	GIN Rate (GIN Cursor Movement in Terminal Space Units)
0 — 16	64
17 — 32	128
33 — 48	192
49 — 64	256
65 — 80	320
81 — 96	384
97 — 112	448
113 — 128	512

SET GIN REPORT FORMAT

Specifies the amount of information returned to the host in a GIN report.

Host: ^[E]c**IK** report-format
Setup: **GINREPORT** report-format

report-format: integer; specifies the format for GIN reports. Valid range is 0 through 7 (see Table 23).
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 23
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: **ESC 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, 56,* and *64*) are valid (see Table 19 under SET GIN AREA).

Defaults: Factory = (none)
Omitted = 0

rubberbanding-mode: integer; selects a rubberbanding operation. Must be one of the following:

0 Disables rubberbanding
1 Draws a rubberband line between each Locate point, starting from the next point the user inputs
2 Draws a rubberband line between each Locate point, starting from the GIN display start-point

Defaults: Factory = 0
Omitted = 0

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 **ESC IR81**
Setup **GINRUBBERBAND 8,1**

SET GIN STROKE FILTERING

Restricts the number of Stroke Reports sent to the host.

Host: ^{E}c**IF** 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, 18, and 66 (see Table 19 under SET GIN AREA).

Defaults: Factory = (none)
Omitted = Error

distance-filter: integer; specifies the minimum distance (in terminal space units) that the stylus, puck, or mouse must move before generating a 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 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, the requirements of each filter must be met before the terminal sends the next point.

Example: Host ^{E}c**IF:A82**
Setup **GINFILTERING 10,24,2**

SET GIN WINDOW

Creates a window in terminal space for use by the SET GIN AREA command.

Host: **ESC IW** 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 **ESC IW SP py SP Y # D TW " 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: **ESC 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 predefined or user-defined character font. Valid range is 0 through 32767.
Defaults: Factory = Depends on keyboard (see Table 24)
Omitted = 0

Fonts 0, 1, 2, 3, 9, and 12 are predefined as listed in Table 24. Other font numbers are for user-defined fonts.

Example: Host ^{E}c**MF<**
Setup **GTFONT 12**

Table 24
PREDEFINED GRAPHTEXT FONTS

Font Number	Graphtext Font
0	North American (ASCII)
1	Swedish
2	German
3	United Kingdom
9	Danish/Norwegian
12	French

SET GRAPHTEXT FONT GRID

Creates a graphtext font and specifies the dimensions of the invisible grid used for defining the characters.

Host: **$^{E}_{C}$SG** 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 issuing BEGIN GRAPHTEXT CHARACTER to define 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 **$^{E}_{C}$SG4A>B8**
Setup **GTGRID 4,30,40**

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 –32768.0 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 25.

Example: Host $^{E}_{C}$**MRD–!**
Setup **GTROTATION –77,–1**

Table 25
STRING-PRECISION CHARACTER ROTATION

Specified Rotation	Actual Rotation
$0.0° \leqslant angle < 45.0°$	0°
$45.0° \leqslant angle < 135.0°$	90°
$135.0° \leqslant angle < 225.0°$	180°
$225.0° \leqslant angle < 315.0°$	270°
$315.0° \leqslant angle < 360.0°$	0°

SET GRAPHTEXT SIZE

Sets the size of graphtext.

Host: **ESCMC** 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 26 gives the *height* ranges (in terminal space units) that yield the first three character sizes available.

Example: Host **ESCMCA>B8:**
Setup **GTSIZE 30,40,10**

Table 26
STRING-PRECISION GRAPHTEXT SIZE EXAMPLES[a]

Specified Height	Resulting Size (Pixels)
1 — 88	7 × 9
89 — 146	14 × 18
147 — 205	21 × 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 –32768.0 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 FEATURES

Controls (1) memory allocation for background copying and (2) pagination of copies made on continuous-feed copiers (and the LaserJet). (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**QX** features-array
Setup: **HCFEATURES** features-array

features-array: integer array; pairs of integers — each pair specifies which feature is being set (the first integer) and the value assigned to that feature (the second integer). Valid values are shown in Table 27.
Defaults: Factory = See Table 27
Omitted = Error

Allocating memory for background copying requires a significant part of the terminal's extended memory and may cause some application programs to run out of memory.

You can't change from background to foreground copying (or vice-versa) while a copy is in progress.

Example: Host $^{E}_{C}$**QX:1R<28384C250**
Setup **HCFEATURES 1,300,2,8,3,8,4,50,5,0**

Table 27
PARAMETER SETTINGS FOR SET HARDCOPY FEATURES

Feature	Function	Type of Copy	Type of Copier	Valid Values[a]	Default Value
1 Memory for Background Copying	Turns background copying on and off by allocating memory (in 16-block units of 256 bytes per block)	Screen	All graphics copiers except LaserJet	0 — 65536	0
2 Top Margin	Controls the number of blank lines at the top of each page	Dialog	Continuous feed & LaserJet[b]	0 — 32767	3
3 Bottom Margin	Controls the number of blank lines at the bottom of each page	Dialog	Continuous feed & LaserJet[b]	0 — 32767	3
4 Text Length	Controls the number of lines of text on each page	Dialog	Continuous feed & LaserJet[b]	0 — 32767	60
5 Paper Advance	Controls whether paper should advance between each screen copy	Screen	Continuous feed only	1 (advance) 0 (no advance)	1

[a] **The valid values shown can be issued without generating an error, but they are not necessarily reasonable values. Margins and page length together generally shouldn't exceed 66 lines.**

[b] **The LaserJet automatically inserts three lines each for top and bottom margins; this means that any margins you specify with HCFEATURES are added to these initial three lines.**

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 each line
1 Sends a $^{C}_{R}{}^{L}_{F}$ combination at the end of each line

Defaults: Factory = 1
Omitted = 0

This command affects copies made on either text or graphics monochrome printers connected to the COPIER port.

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 hardcopy (4691 and 4692 only). (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.

Example: Host $^{E}_{C}$**QO2**
Setup **HCORIENT VCENTER**

SET KEY EXECUTE CHARACTER

Specifies the character that determines which characters in a key macro are directed to the host and which are directed to 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 ADE value of 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: **EcMV** line-style
Setup: **LINESTYLE** line-style

line-style: integer; selects a predefined line style. Valid range is 0 through 7, as shown in Figure 6.
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 **EcMV1**
Setup **LINESTYLE 1**

Parameter	Line Style
0	
1	
2	
3	
4	
5	
6	
7	

Figure 6. Line Styles.

SET MARKER TYPE

Selects the kind of marker to be drawn.

Host: ^{E}c**MM** marker-number
Setup: **MARKERTYPE** marker-number

marker-number: integer; selects a predefined marker type. Valid range is 0 through 10, as shown in Figure 7.
Defaults: Factory = 0
Omitted = 0

Changing marker types does not affect markers already displayed.

Example: Host ^{E}c**MM:**
Setup **MARKERTYPE 10**

Parameter	Marker Type	Parameter	Marker Type
0	·	6	□
1	+	7	◇
2	+	8	⊡
3	✳	9	◈
4	⬯	10	◘
5	✕		

Figure 7. Marker Types.

SET NUMBER OF COPIES

Specifies the number of copies queued for each copy request.

Host: ^{E}c**QN** number-of-copies
Setup: **HCCOPIES** number-of-copies

number-of-copies: integer; specifies the number of times an image will be copied. Must be in the range 0 through 65535 (*0* defaults to *1*, and values over 64 default to *64*).
Defaults: Factory = 1
Omitted = 1

A *copy request* is queued in response to each occurrence of a HARDCOPY or 4010 HARDCOPY command or each press of the SCopy or DCopy key.

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.

You can issue this command during coax communications without affecting coax operations. The new parity selection will affect RS-232 communications immediately.

SET PICK APERTURE

Sets the size of the Pick aperture used to Pick segments.

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 an identification number to part of a segment definition so it can be treated as a unit in GIN Pick operations and in segment editing.

Host: ^{E}c**MI** 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 ^{E}c**MIA0**
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: ^{E}c**SP** 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 ^{E}c**SP#ag6F**
Setup **SGPIVOT 2841,412**

SET PIXEL BEAM POSITION

Sets the position of the pixel beam in the pixel viewport.

Host: ESC**RH** beam-position
Setup: **PXPOSITION** beam-position

beam-position: xy-coordinate; specifies the pixel beam position in the pixel viewport. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)
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 ESC**SPpySPY**
Setup **PXPOSITION 100,100**

SET PIXEL VIEWPORT

Specifies the pixel viewport's size and position in graphics memory space.

Host: ESC**RS** lower-left
upper-right
Setup: **PXVIEWPORT** lower-left
upper-right

lower-left: xy-coordinate; specifies one corner of the pixel viewport. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)
Defaults: Factory = 0,0
Omitted = 0,0

upper-right: xy-coordinate; specifies the opposite corner of the pixel viewport. Values for x must be in the range 0 through 639; for y, 0 through 511. (For the 4205, x must be 0 through 511 and y must be 0 through 359.)
Defaults: Factory = 639,479 (479,359 for the 4205)
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 ESC**RSSPpySPY!pb!B**
Setup **PXVIEWPORT 100,100,200,200**

SET PORT BAUD RATE (4205)

Sets the baud rate for the specified 2PPI port. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**PR** 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 $^{E}_{C}$**PR3P0:BV**$^{S}_{P}$
Setup **PBAUD P0:,2400**

SET PORT BLACK WHITE INVERSION (4205)

Instructs the rasterizer to reverse the black and white colors when processing hardcopies. (Can be saved in nonvolatile memory.)

Host: $^{E}_{C}$**PJ** 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 $^{E}_{C}$**PJ3P0:0**
Setup **PINVERSION P0:,NEGATIVE**

SET PORT EOF STRING (4205)

Sets the port end-of-file string for the specified 2PPI port. (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 each character in the string (in host syntax, specifies the ADE of each character). 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 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 4295

Sets the flagging mode for the specified 2PPI port. (Can be saved in nonvolatile memory.)

Host: **ESC 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 = (none)
Omitted = Error

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 flagging

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

start-character: integer (small integer in Setup); specifies the ADE value of 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 ADE value of 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 **ESC PF3P0:1A1A3**
Setup **PFLAG P0:,CHAR,17,19**

SET PORT IMAGE ORIENTATION (4205)

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)

At any of the vertical orientations, the image size is reduced to fit on the narrow axis of the media.

Example: Host **EcPO3P0:2**
Setup **PORIENT P0:,VCENTER**

SET PORT NUMBER OF COPIES (4205)

Specifies the number of copies produced on the copier attached to the rasterizer. (Can be saved in nonvolatile memory.)

Host: ^{E}c**PN** 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 ^{E}c**PN3P1:5**
Setup **PCOPIES P1:,5**

SET PORT PARITY (4205)

Specifies the parity scheme for output through the 2PPI ports. (Can be saved in nonvolatile memory.)

Host: ^{E}c**PP** 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 (none)
Omitted = 0 (low)

SET PORT STOP BITS

4205

Sets the number of stop bits and data bits sent to the specified 2PPI port. (Can be saved in nonvolatile memory.)

Host: **EcPB** 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 **EcPB3P0:27**
Setup **PBITS P0:,2,7**

SET PROMPT STRING

Specifies the string that initiates Prompt mode. (Can be saved in nonvolatile memory.)

Host: **EcNS** prompt-string
Setup: **PROMPTSTRING** prompt-string

prompt-string: integer array (delimited string in Setup syntax); specifies each character in the string (in host syntax, specifies the ADE of each character). 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.

You can issue this command during coax communications without affecting coax operation. The new prompt string will become effective for RS-232 communications immediately.

Example: Host **EcNS3F1F2F3**
Setup **PROMPTSTRING /abc/**

SET QUEUE SIZE

Specifies the size of the terminal's input queue. (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. A very small input queue may cause data to be lost when the input queue overflows.

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: ^{E}c**IS** 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 19 under SET GIN AREA), or one of the following:

–3	Non-GIN reports
–2	Graphics position report (in response to REPORT GIN POINT)
–1	All reports (GIN and non-GIN)

Defaults: Factory = (none)
Omitted = 0

signature-character: integer (small integer or key specifier in Setup); specifies the character by ADE (or keystroke in Setup). Must be in the range 0 through 127.

Defaults: Factory = 0 (^{N}U)
Omitted = 0 (^{N}U)

terminating-signature-character: integer (small integer or key specifier in Setup); specifies the character by ADE (or keystroke in Setup). Must be in the range 0 through 127.

Defaults: Factory = 0 (^{N}U)
Omitted = 0 (^{N}U)

If you set the signature or terminating signature character to ^{N}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 the segment to be added to (or removed from) a matching class. 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: **ESC SD** segment-number detectability

Setup: **SGDETECT** segment-number detectability

segment-number: integer; specifies the segment to be made detectable (or undetectable). 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 (yes)
Omitted = 0 (no)

Example: Host **ESCSDA01**
Setup **SGDETECT 16,YES**

SET SEGMENT DISPLAY PRIORITY

Sets a segment's display and GIN Pick priority.

Host: **EcSS** segment-number
priority-number
Setup: **SGPRIORITY** segment-number
priority-number

segment-number integer; specifies the segment to be assigned priority. 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. Valid range is –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 **EcSSB04**
Setup **SGPRIORITY 32,4**

SET SEGMENT EDIT MODE

Specifies how changes made during segment editing affect the trailing part of the segment.

Host: **EcUH** 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	Editing doesn't affect trailing part
1	position	Editing affects position of trailing part
2	attribute	Editing affects attributes of trailing part
3	both	Editing affects both position and attributes of trailing part

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

Example: Host **EcUH1**
Setup **SGEDIT POSITION**

SET SEGMENT HIGHLIGHTING

Turns highlighting (blinking) on or off for a segment.

Host: **EcSH** segment-number
highlighting

Setup: **SGHIGHLIGHT** segment-number
highlighting

segment-number: integer; specifies the segment to be highlighted. 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 **EcSHA00**
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 the segment to be transformed. 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 -32768.0 through 32767.0.

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 -32768.0 through 32767.0.

Defaults: Factory = 1.0
Omitted = 0.0

rotation-angle: real; specifies the rotation angle in degrees. Valid range is -32768.0 through 32767.0. 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.

Avoid positions that extend a segment 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 **^{E}$_{C}$SI1202000^{S}$_{P}$jb^{S}$_{P}$B**
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: ^[E]cSX segment-number position

Setup: **SGPOSITION** segment-number position

segment-number: integer; specifies the segment to be moved. 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.

Avoid positions that extend a segment 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.

Example: Host ^[E]cSX1#^[1] }#]
Setup **SGPOSITION 1,500,500**

SET SEGMENT SCALE ROTATE

Scales or rotates a segment.

Host: ^[E]cSJ 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	The segment called in the next CALL SEGMENT command (only affects the segment as it's 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 -32768.0 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 -32768.0 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 is -32768.0 through 32767.0.

Defaults: Factory = 0.0
Omitted = 0.0

Example: Host ^[E]cSJ%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: **ESCSV** segment-number visibility

Setup: **SGVISIBILITY** segment-number visibility

segment-number: integer; specifies the segment to be made visible or invisible. 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

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

A segment must specifically be made visible in any view other than the one in which it was created.

Example: Host **ESCSVA01**
Setup **SGVISIBILITY 16,YES**

SET SEGMENT WRITING MODE

Selects the writing mode used when displaying a segment.

Host: **ESCSM** segment-number writing-mode
Setup: **SGMODE** segment-number writing-mode

segment-number: integer; specifies which segment will be assigned a new writing mode. 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); specifies 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

Example: Host **ESCSMA01**
Setup **SGMODE 16,SET**

SET SNOOPY MODE

Specifies whether commands received from the host are executed or are displayed without executing.

Host: **ESCKS** snoopy-mode
Setup: **SNOOPY** snoopy-mode

snoopy-mode: integer (keyword in Setup syntax); must be one of the following:

Host	Setup	
0	no	Commands are executed
1	yes	Commands are displayed; Snoopy mode terminated *only* from the keyboard
2	on	Commands are displayed; Snoopy mode terminated from the host *or* keyboard

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

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-stop-bits
Setup: **STOPBITS** number-of-stop-bits

number-of-stop-bits: integer; specifies the number of stop bits. Valid values are 1 and 2.
Defaults: Factory = 1
Omitted = Error

You can issue this command during coax communications without affecting coax operation. The new stop bit setting will become effective for RS-232 communications immediately.

SET SURFACE COLOR MAP

Sets the color map for a graphics writing surface.

Host: $^{E}_{C}$**TG** 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 The super surface
1 — 4 A particular surface
Defaults: Factory = (none)
Omitted = Error

color-mixtures: integer array (of quadruples); assigns color mixtures to one or more color indices.
Defaults: Factory = See Table 28
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 (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.

The valid ranges for the first, second, and third coordinates in each system (determined by SET COLOR MODE) 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 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.

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 **^{E}cTG1430F40**
Setup **CMAP 1,3,0,100,0**

Table 28
DEFAULT GRAPHICS AREA COLOR MIXTURES

Color Index	Color Mixture	Color Mode[a] H	L	S	R	G	B	C	M	Y
0[b]	Erase Index	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] **Use the SET COLOR MODE command to choose color mode:**
HLS : H = hue, L = lightness, S = saturation
RGB : R = red, G = green, B = blue
CMY : C = cyan, M = magenta, Y = yellow

[b] **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 DEFINITIONS

Sets the number of surfaces and the number of bit planes in each surface.

Host: **ESC RD** 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

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 **ESC RD211**
Setup **SDEFINITIONS 1,1**

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; pairs of integers that specify a surface number and its priority. The first integer in each pair specifies a surface number; the second integer specifies the priority. Valid range for each integer is 1 through 4.
Defaults: Factory = 1,1
Omitted = Error

Example: Host **ESC RN814233241**
Setup **SPRIORITIES 1,4,2,3,3,2,4,1**

In Setup, use a comma or space to separate each integer you enter.

In host syntax, the array count specifies the number of integers (not the number of pairs).

SET SURFACE VISIBILITY

Sets the visibility of one or more surfaces without affecting surface priorities.

Host: ^[E]c**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:

0 Invisible (no objects displayed)
1 Visible
2 Blinking (alternates between visible and invisible)

Defaults: Factory = All surfaces visible
Omitted = Error

In Setup, use a comma or space to separate each integer you enter.

In host syntax, the array count specifies the number of integers (not the number of pairs).

Example: Host ^[E]c**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: ^[E]c**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 ^[E]c**KB35:?**
Setup **TABS 5,10,15**

SET TABLET HEADER CHARACTERS (4205)

Selects the key-codes sent in GIN Stroke Reports. (Can be saved in nonvolatile memory.)

Host: ^{E}c**IH** key-code
Setup: **GINSHEADERCHARS** key-code

key-code: integer (keyword in Setup); selects which characters are returned in intermediate and final GIN Stroke Reports. Must be one of the following:

Host	Setup	
0	letters	Selects J (intermediate) and O (final)
1	control	Selects ^{S}B (intermediate) and ^{U}s (final)

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

This command controls the key-code report for intermediate points and the final point in a Stroke Report when the tablet is enabled (but not the mouse).

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

Example: Host ^{E}c**IH1**
Setup **GINSHEADERCHARS CONTROL**

SET TERMINAL MODEL

Specifies the model number that the terminal will return to the host in response to a REPORT TERMINAL SETTINGS command. (Can be saved in nonvolatile memory.)

Setup: **TERMINAL** model-number

model-number: integer; specifies the model number of the terminal. Valid range is 0 through 65535 (*0* specifies the terminal's own model number).

Defaults: Factory = Terminal's own model number
Omitted = Terminal's own model number

Example: Setup **TERMINAL 4107**

SET TEXT INDEX

Specifies the color index for graphtext characters and for alphatext characters in the graphics area.

Host: **EcMT** 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

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.

This command does not affect alphatext in the dialog area (use SET DIALOG AREA INDEX instead).

Example: Host **EcMT2**
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: **EcND** 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.

You can issue this command during coax communications without affecting coax operation. The new transmit delay setting will affect RS-232 communications immediately.

Example: Host **EcNDL8**
Setup **XMTDELAY 200**

SET TRANSMIT RATE LIMIT

Specifies the maximum transmit baud rate. (Can be saved in nonvolatile memory.)

Host: ^EcNL 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

You can issue this command during coax communications without affecting coax operation. The new transmit rate limit will affect RS-232 communications immediately.

Example: Host ^EcNLR<
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	The super surface
0	Unchanged
1 — 4	A specific surface

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

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 ^[E]cRA002
Setup **VATTRIBUTES 0,0,2**

SET VIEW DISPLAY CLUSTER

Specifies the views that are in a view cluster.

Host: ^[E]c**RQ** view-numbers
Setup: **VCLUSTER** view-numbers

view-numbers: integer array; specifies which views 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: **ESC RV** 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.

Defaults: Factory = 4095,3071
Omitted = 0,0

Segments that are visible when a viewport 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 viewport.

Example: Host **ESC RV SP by SP L5 ' | 2Q**
Setup **VIEWPORT 50,100,2372,2800**

SET WINDOW

Sets the boundaries of the current view's window in terminal space.

Host: ESC**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 ESC**RW**SP**by**SP**L5**\ |**2Q**
Setup **WINDOW 50,100,2372,2800**

SET 4014 ALPHATEXT SIZE (4205)

Selects between two alphatext character sizes to allow compatibility with older Tektronix terminals.

Host: ESC 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
Omitted = (none)

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 older Tektronix terminals.

Host: ESC line-style-code

line-style-code: single character; specifies one of the predefined line styles shown in Figure 8.

Defaults: Factory = Solid line
Omitted = (none)

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 8. 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
- Version
- Level
- Terminal

You can get the status of all commands by entering just **STATUS**.

SYNTAX MODE

Reports, saves, or restores the terminal's host command mode.

Host: ESC#! operation

operation: integer; specifies one of the following:

0 Reports host command mode
1 Saves host command mode
2 Restores host command mode

Defaults: Factory = (none)
Omitted = Error

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*.

Example: Host ESC#!1

TEK HEADER CHARACTER (Requires Coax Option)

Specifies the header character that the terminal uses during coax communications to identify Tektronix graphics in the 3270 data stream. (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

When the Tek header character is set to *0*, the terminal will automatically interpret its buffer contents as 3270 alphanumeric commands and data.

This command does not affect RS-232 communications.

TRANSLATION METHOD (Requires Coax Option)

Specifies the method that the terminal uses during coax communications to translate characters in the coax interface buffer. (Can be saved in nonvolatile memory.)

Setup: **TMETHOD** translation-method

translation-method: integer; specifies a translation method. Valid values are:

0 Selects the ASCII-to-EBCDIC translate-table method
1 Selects the ASCII plus-constant method

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 SCopy key.

TEK-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 29 describes the kind of value used for each type of report parameter.

Table 29
REPORT PARAMETER TYPES

Type	Description	Example
Character	An ASCII character with ADE in the range 0 —127	a 97
Integer	Encoded form integers between -32768 and 65535; reported as three ASCII characters sent in this order: Hi-I, Hi-I, Lo-I	"M-
Large Integer[a]	Encoded form of integers over 65535; reported as a sequence of four to six ASCII characters sent in this form: Hi-I, Hi-I, Hi-I, Hi-I, Hi-I, Lo-I	!/S7
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	Encoded form of a real number; reported as two integer reports — the mantissa and the exponent.	3!

[a] **This report type is used only for reporting extended memory availability on terminals equipped with the optional megabyte of memory. You must use the SET COORDINATE MODE command to enable the terminal to report large integers in a Terminal Settings Report.**

Answerback Report

This report is sent 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 — the report is simply the string itself. 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 and 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	PORT 0
P1	PORT 1
HC	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:

Bit 0	1 = The interface is present
Bit 1	1 = The port is busy
Bits 2 — 15	unused

The binary bits of the *status-integer* for the COPIER port hold the following information:

Bit 0	1 = The interface is present
Bit 1	1 = The port is busy
Bit 2	unused
Bit 3	1 = A copier is connected and powered up
Bits 4 — 15	unused

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 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 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, this report is sent when the user inputs a point or in response to a REPORT GIN POINT command.

Locate and Stroke Reports have the following format:

signature character
key-code
cursor-position
view-number [1]
EOL string

Pick Reports have this format:

signature character
key-code
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-code: character report; indicates the action that initiated the report. See Table 30.

cursor-position: xy-report; reports the position of the GIN cursor.

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 Programmers Manual 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*.

[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.**

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 Programmers Manual for details.

The *key-code* included in the report depends on whether the user input a point or the host issued a REPORT GIN POINT command:

- When the Joydisk is enabled as the GIN device, the terminal reports the character assigned to the key that the user presses.
- When the tablet or mouse is enabled as the GIN device, the terminal reports one of the characters shown in Table 30, depending on which button the user presses.
- When the host issues a REPORT GIN POINT command, the terminal returns a ^{S}P character, regardless of which GIN device is enabled.

For Stroke Reports from a tablet, the *key-code* for the first point depends on which button the user presses (see Table 30). The *key-code* is *J* for intermediate points and *O* for the final point (or ^{S}B and ^{U}s, respectively, if you've issued the SET TABLET HEADER CHARACTERS command).

For Stroke Reports from the mouse, the *key-code* for the first point is always *1, 2,* or *3* (depending on which button was pressed). The *key-code* is always *J* for intermediate points and *O* for the final point.

Table 30
KEY CODES IN GIN REPORTS

Tablet Input	Key	Key Code	
		Press	Release[a]
Stylus	Tip[b]	**Z** (ADE 90)	**z** (ADE 122)
	Side button[c]	**1** (ADE 49)	**Q** (ADE 81)
Puck[d]	Button 1 (yellow)	**Z** (ADE 90)	**z** (ADE 122)
	Button 2 (white)	**1** (ADE 49)	**Q** (ADE 81)
	Button 3 (blue)	**2** (ADE 50)	**R** (ADE 82)
	Button 4 (green)	**3** (ADE 51)	**S** (ADE 83)
Mouse	Left button	**1** (ADE 49)	(none)
	Middle button	**2** (ADE 50)	(none)
	Right button	**3** (ADE 51)	(none)

[a] Key-release codes are only transmitted if you've enabled key-release GIN for the tablet using the Pick or Locate function (*enable-codes* 2056 through 2105).

[b] Pressing the stylus tip *down* reports the same key-code as *press*; lifting the stylus tip *up* reports the same key-code as *release*.

[c] 4957 Graphics Tablet stylus only.

[d] The puck on the 4958 Tablet has four gray keys numbered 1 through 4. The puck on the 4957 Tablet has four color-coded keys.

Port Status Report (4205)

This report is sent in response to the REPORT PORT STATUS command and has the following format:

signature character
port-identifier
port-information
EOL string

port-identifier: two character-reports; names the 2PPI port to which the Port Status Report pertains. Will be one of the following:

P0	PORT 0
P1	PORT 1
$^{S_P S_P}$	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 $^{S_P S_P}$, then the *port-information* parameter is omitted.

Table 31
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 and 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 31 (previous page).

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 32 shows the status codes for each attribute along with its parameter type.

Table 32
FORMATS FOR SEGMENT 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 and 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 33.

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 $_{SP}S_{P}$.

The contents of the *parameter-report* for the special inquiry codes are listed in Table 33.

Table 33
TERMINAL SETTINGS REPORT: SPECIAL INQUIRY CODES

Special Inquiry Code	Contents of Report
?M	Integer report: The total amount of standard memory available, reported as a number of 16-byte units of memory
	Integer report: The largest contiguous block of standard memory, reported as a number of 16-byte units of memory
?P	Integer report:[a] The total amount of extended memory available, reported as a number of 16-byte units of memory
	Integer report:[a] The largest contiguous block of extended memory, reported as a number of 16-byte units of memory
?T	Integer report: The terminal model number or the number specified by the last SET TERMINAL MODEL command
00	Integer report: The number of the firmware version installed in the terminal
99	Integer report: The level number of the firmware version installed in the terminal

[a] To query for extended memory availability on terminals equipped with the optional megabyte of memory, you must issue the SET COORDINATE MODE so the terminal can report large integers.

4010 GIN Report

When 4010 GIN is enabled, this report is sent in response to the user pressing a key. The report 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 GIN 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 34.

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.

Table 34
TERMINAL STATUS CHARACTER BITS

B7	B6	B5	B4	B3	B2	B1
0	1	HCU	V	A	0	1

For the meaning of Bits 3 and 4 as represented in Table 34, see Table 35. 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 35
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

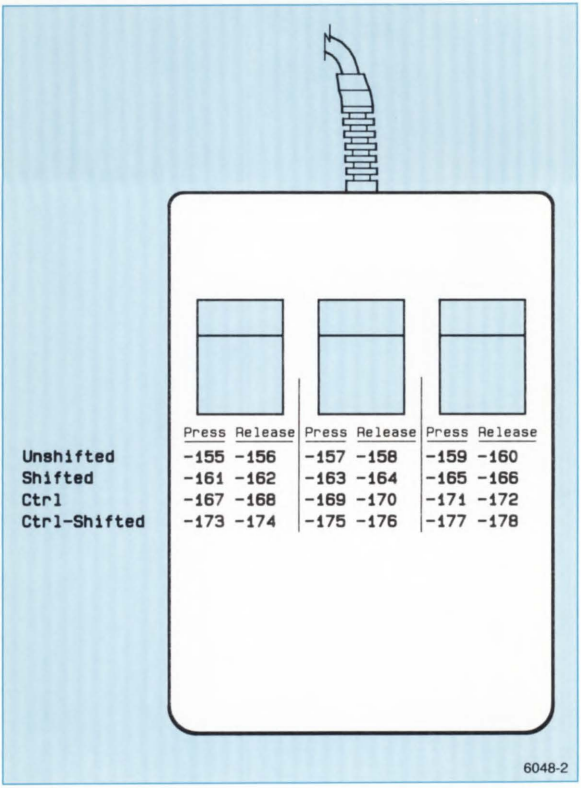


Figure 9. Macro Numbers for the Mouse Buttons.

	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

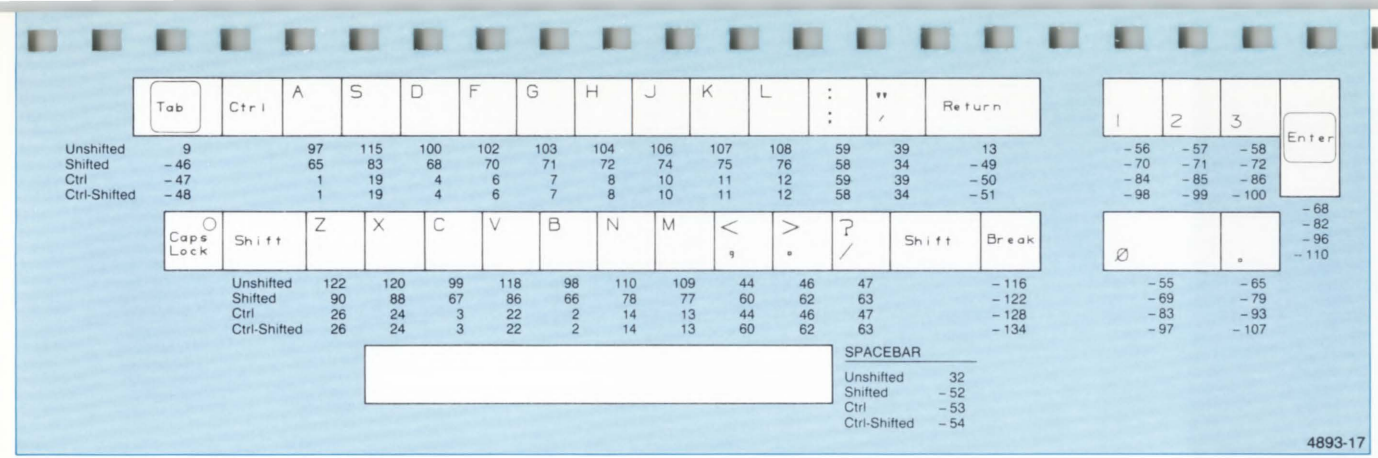
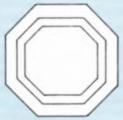


Figure 10. North American/ASCII Keyboard (Standard): Layout and Key Macro Numbers.



	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

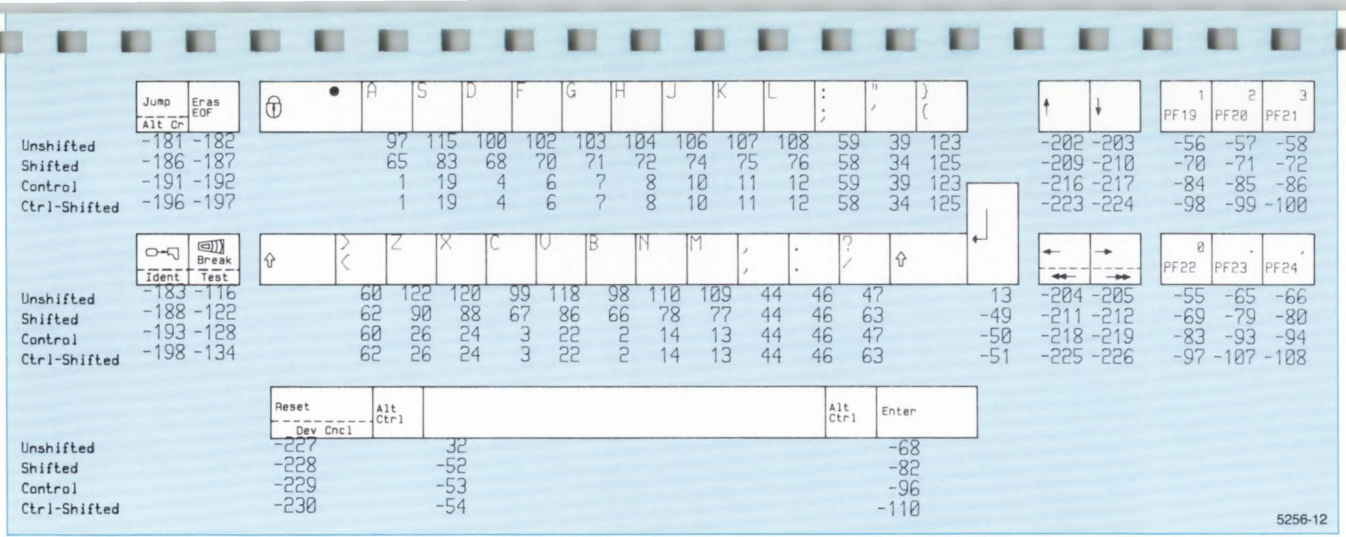


Figure 11. North American/ASCII Keyboard (Coax): Layout and Key Macro Numbers.

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

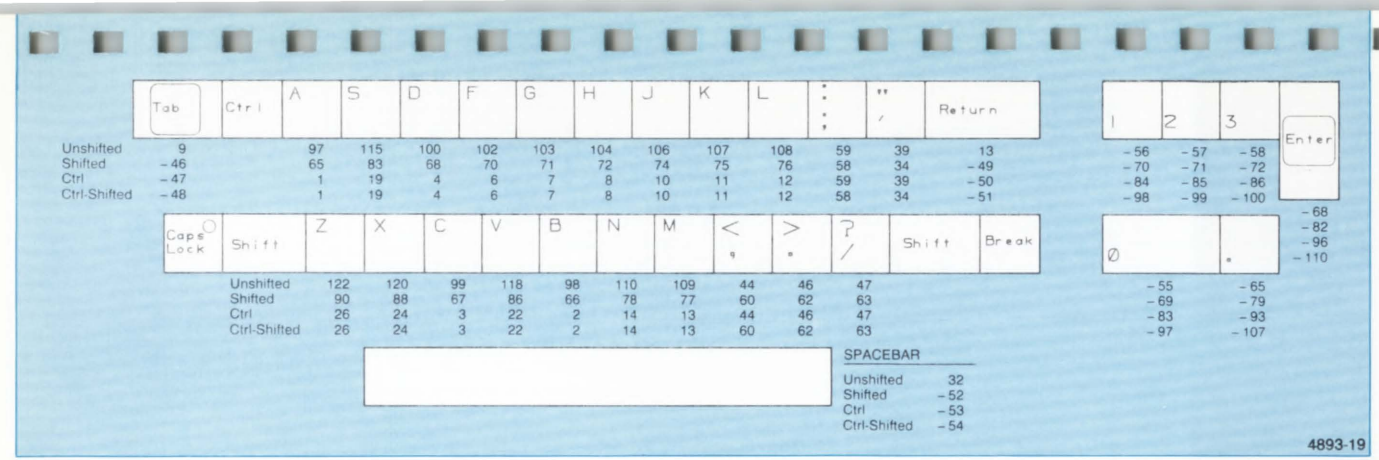
F5	F6	F7	F8
132	133	134	135
140	141	142	143
-6	-7	-8	-9
-14	-15	-16	-17

	D Eras S Eras	{ [	! 1	@ 2	£ 3	$ 4	% 5	^ 6	& 7	* 8	(9	) Ø	— _	+ =	}]	Rub Out
Unshifted	-115	91	49	50	51	52	53	54	55	56	57	48	45	61	93	127
Shifted	-121	123	33	64	35	36	37	94	38	42	40	41	95	43	125	-34
Ctrl	-127	27	49	50	51	52	53	54	55	56	57	48	45	61	29	-35
Ctrl-Shifted	-133	27	33	0	35	36	37	30	38	42	40	41	31	43	29	-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	\ |	Back Space	Line Feed
Unshifted	27	124	113	119	101	114	116	121	117	105	111	112	92	8	10
Shifted	-37	126	81	87	69	82	84	89	85	73	79	80	96	-40	-43
Ctrl	-38	124	17	23	5	18	20	25	21	9	15	16	28	-41	-44
Ctrl-Shifted	-39	126	17	23	5	18	20	25	21	9	15	16	28	-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



	Tab		A	S	D	F	G	H	J	K	L	: ;	" '	Return
Unshifted	9		97	115	100	102	103	104	106	107	108	59	39	13
Shifted	-46		65	83	68	70	71	72	74	75	76	58	34	-49
Ctrl	-47		1	19	4	6	7	8	10	11	12	59	39	-50
Ctrl-Shifted	-48		1	19	4	6	7	8	10	11	12	58	34	-51

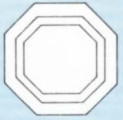
	1	2	3	Enter
	-56	-57	-58	-68
	-70	-71	-72	-82
	-84	-85	-86	-96
	-98	-99	-100	-110

	Caps Lock	Shift	Z	X	C	V	B	N	M	< ,	> .	? /	Shift	Break
Unshifted			122	120	99	118	98	110	109	44	46	47		
Shifted			90	88	67	86	66	78	77	60	62	63		
Ctrl			26	24	3	22	2	14	13	44	46	47		
Ctrl-Shifted			26	24	3	22	2	14	13	60	62	63		

	Ø	.
	-55	-65
	-69	-79
	-83	-93
	-97	-107

SPACEBAR	
Unshifted	32
Shifted	-52
Ctrl	-53
Ctrl-Shifted	-54

Figure 12. United Kingdom Keyboard (Standard): Layout and Key Macro Numbers.



	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	? 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

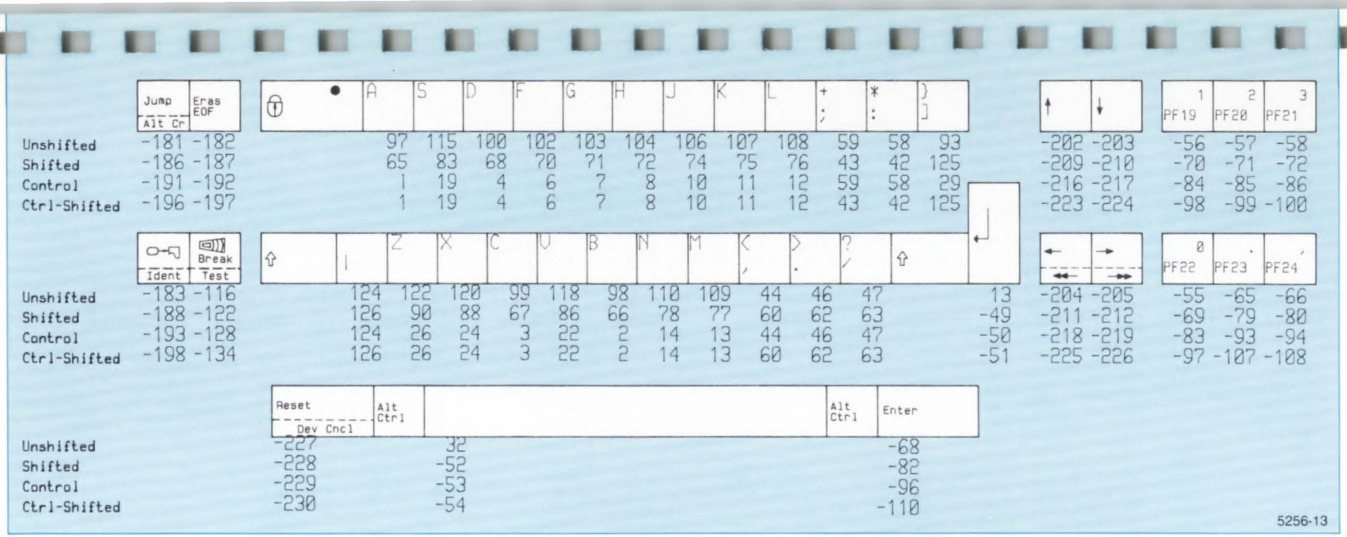
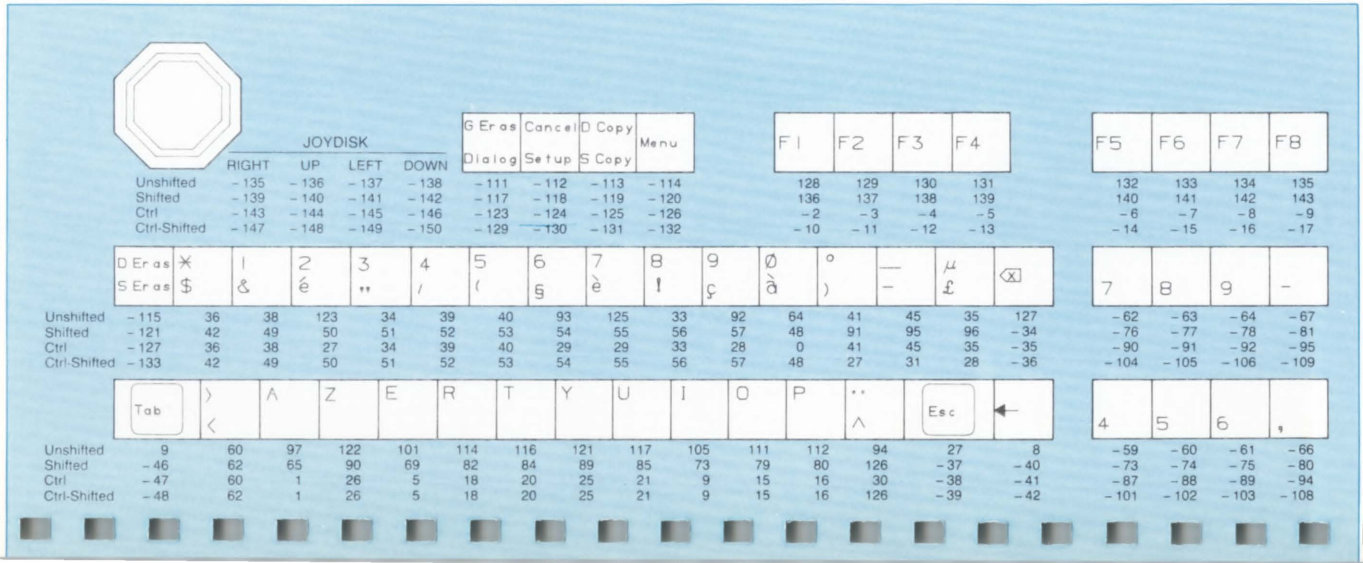


Figure 13. United Kingdom Keyboard (Coax): Layout and Key Macro Numbers.

FRENCH KEYBOARD (Standard)



	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 / é	3 / "	4 / '	5 / (	6 / §	7 / è	8 / !	9 / ç	Ø / à	° /)	— / -	µ / £	⌫	7	8	9	-
Unshifted	-115	36	38	123	34	39	40	93	125	33	92	64	41	45	35	127	-62	-63	-64	-67
Shifted	-121	42	49	50	51	52	53	54	55	56	57	48	91	95	96	-34	-76	-77	-78	-81
Ctrl	-127	36	38	27	34	39	40	29	29	33	28	0	41	45	35	-35	-90	-91	-92	-95
Ctrl-Shifted	-133	42	49	50	51	52	53	54	55	56	57	48	27	31	28	-36	-104	-105	-106	-109

	Tab	> / <	A	Z	E	R	T	Y	U	I	O	P	¨ / ^	Esc	←	4	5	6	¸
Unshifted	9	60	97	122	101	114	116	121	117	105	111	112	94	27	8	-59	-60	-61	-66
Shifted	-46	62	65	90	69	82	84	89	85	73	79	80	126	-37	-40	-73	-74	-75	-80
Ctrl	-47	60	1	26	5	18	20	25	21	9	15	16	30	-38	-41	-87	-88	-89	-94
Ctrl-Shifted	-48	62	1	26	5	18	20	25	21	9	15	16	126	-39	-42	-101	-102	-103	-108

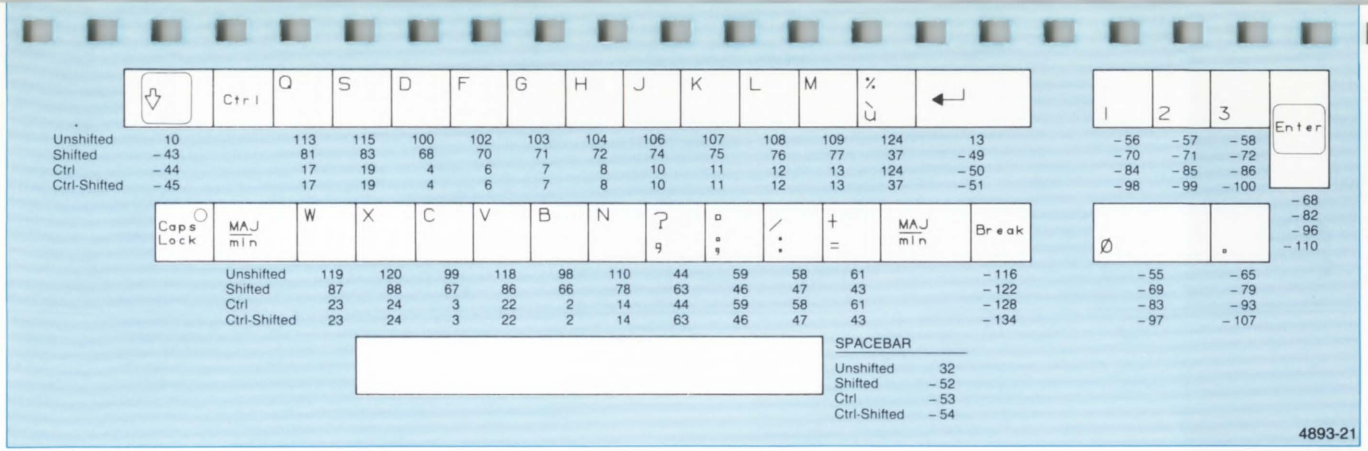
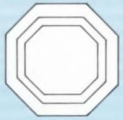


Figure 14. French Keyboard (Standard): Layout and Key Macro Numbers.



	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

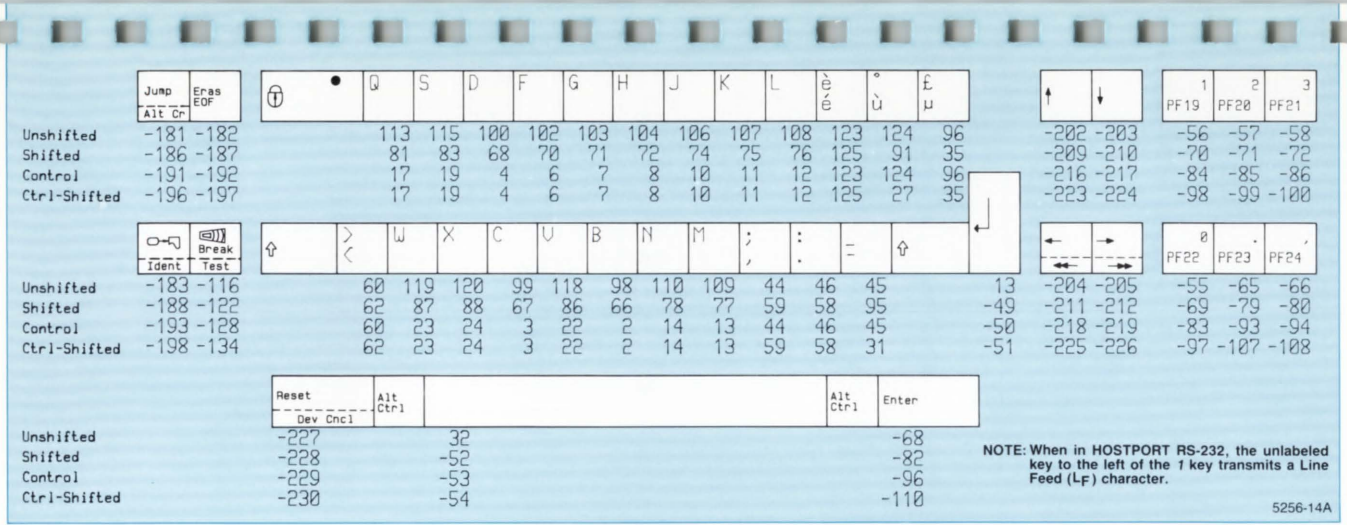
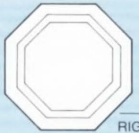


Figure 15. French Keyboard (Coax): Layout and Key Macro Numbers.



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	-
-62	-63	-64	-67
-76	-77	-78	-81
-90	-91	-92	-95
-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	,
-59	-60	-61	-66
-73	-74	-75	-80
-87	-88	-89	-94
-101	-102	-103	-108

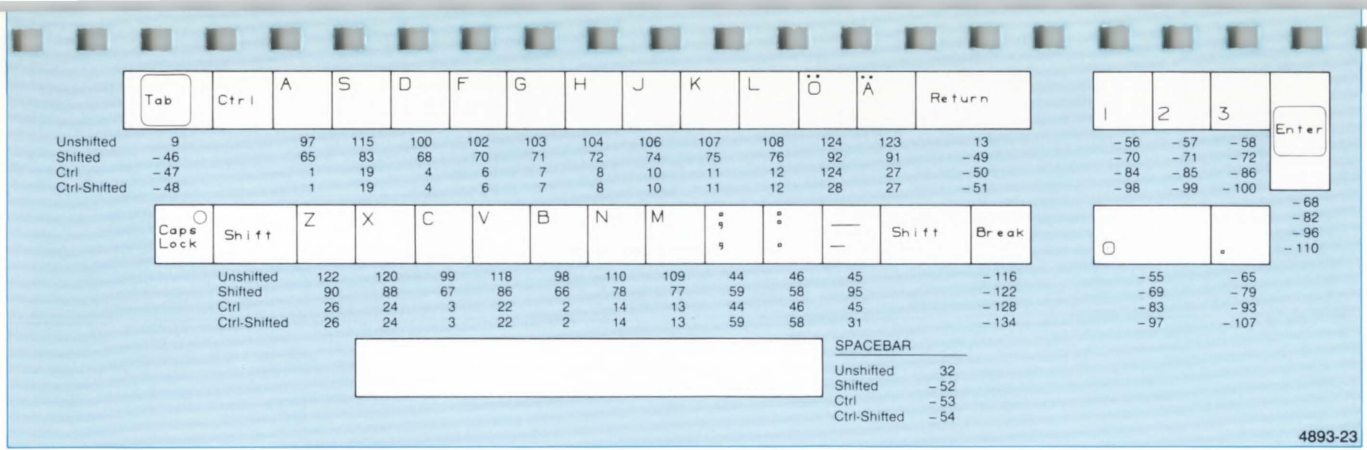
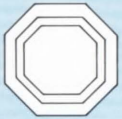


Figure 16. Swedish Keyboard (Standard): Layout and Key Macro Numbers.



	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

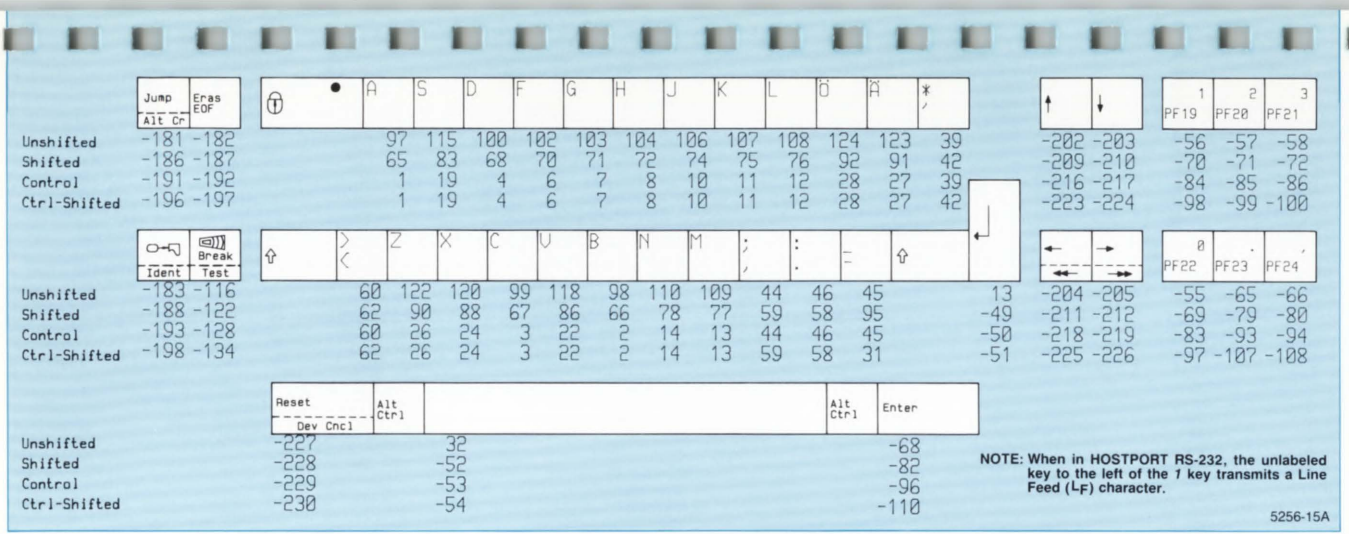


Figure 17. Swedish Keyboard (Coax): Layout and Key Macro Numbers.

	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	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	Å	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

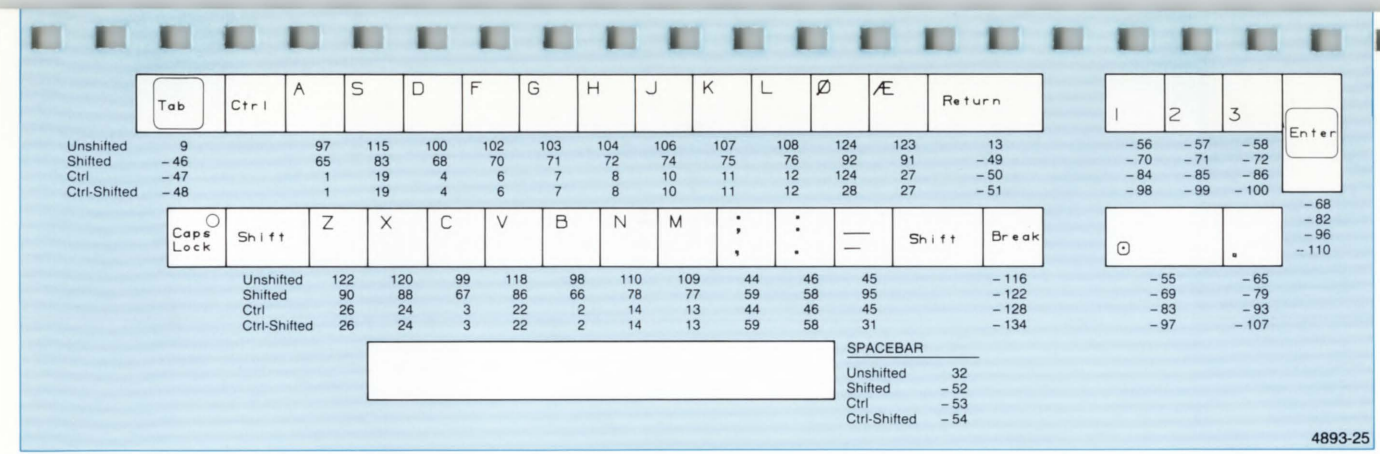
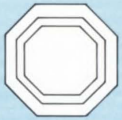


Figure 18. Danish/Norwegian Keyboard (Standard): Layout and Key Macro Numbers.



	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

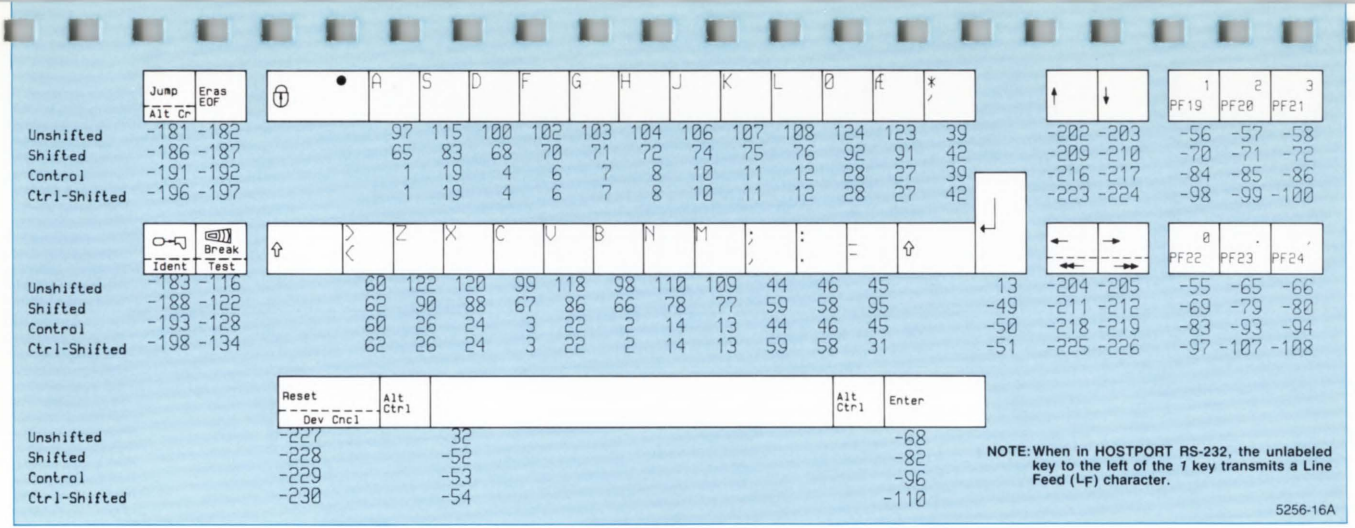


Figure 19. Danish/Norwegian Keyboard (Coax): Layout and Key Macro Numbers.

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

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

7	8	9	-
-62	-63	-64	-67
-76	-77	-78	-81
-90	-91	-92	-95
-104	-105	-106	-109

	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

4	5	6	,
-59	-60	-61	-66
-73	-74	-75	-80
-87	-88	-89	-94
-101	-102	-103	-108

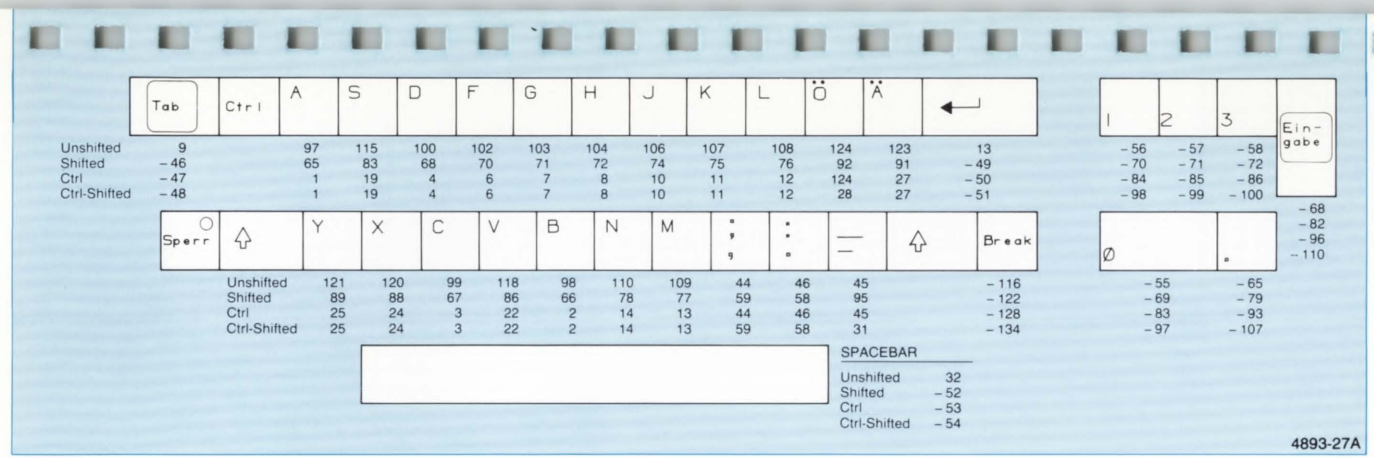


Figure 20. German Keyboard (Standard): Layout and Key Macro Numbers.

	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

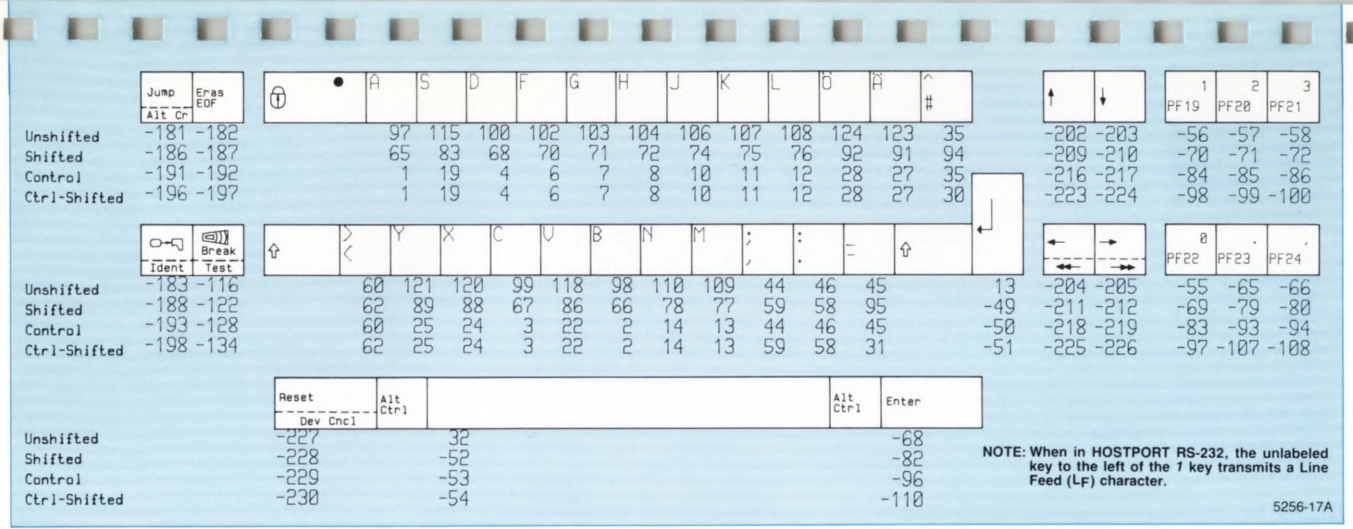


Figure 21. German Keyboard (Coax): Layout and Key Macro Numbers.

SUPPLEMENTARY CHARACTERS 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	Ñ 80	◆ 96	112
0 0 0 1	SH 1	D1 17	Ä 33	1 49	¢ 65	ñ 81	■ 97	113
0 0 1 0	SX 2	D2 18	ä 34	2 50	¡ 66	¿ 82	HT 98	114
0 0 1 1	EX 3	D3 19	Å 35	3 51	† 67	ì 83	FF 99	115
0 1 0 0	ET 4	D4 20	å 36	4 52	□ 68	α 84	CR 100	116
0 1 0 1	EQ 5	NK 21	Æ 37	5 53	■ 69	σ 85	LF 101	117
0 1 1 0	AK 6	SN 22	æ 38	6 54	● 70	τ 86	° 102	118
0 1 1 1	BL 7	EB 23	à 39	7 55	Δ 71	Φ 87	± 103	119
1 0 0 0	BS 8	CN 24	ç 40	8 56	∂ 72	μ 88	NL 104	120
1 0 0 1	HT 9	EM 25	é 41	9 57	λ 73	Σ 89	VT 105	≤ 121
1 0 1 0	LF 10	SB 26	è 42	ù 58	¬ 74	Ω 90	⌋ 106	≥ 122
1 0 1 1	VT 11	EC 27	Ö 43	ß 59	⌊ 75	∫ 91	⌉ 107	π 123
1 1 0 0	FF 12	FS 28	ö 44	Θ 60	⌈ 76	92	⌈ 108	≠ 124
1 1 0 1	CR 13	GS 29	ø 45	¤ 61	⌋ 77	÷ 93	⌊ 109	£ 125
1 1 1 0	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

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Figure 22. Supplementary Characters Code Chart.

RULING CHARACTERS 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	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	SN 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

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Figure 23. Ruling Characters Code Chart.

MULTILINGUAL (ASCII) CODE CHART

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	0	16	Sp 32	° 48	À 64	Đ 80	à 96	ð 112
0 0 0 1	1	17	¡ 33	± 49	Á 65	Ñ 81	á 97	ñ 113
0 0 1 0	2	18	¢ 34	2 50	Â 66	Ò 82	â 98	ò 114
0 0 1 1	3	19	€ 35	3 51	Ã 67	Ó 83	ã 99	ó 115
0 1 0 0	4	20	¤ 36	´ 52	Ä 68	Ô 84	ä 100	ô 116
0 1 0 1	5	21	¥ 37	µ 53	Å 69	Õ 85	å 101	õ 117
0 1 1 0	6	22	¦ 38	¶ 54	Æ 70	Ö 86	æ 102	ö 118
0 1 1 1	7	23	§ 39	· 55	Ç 71	× 87	ç 103	÷ 119
1 0 0 0	8	24	¨ 40	¸ 56	È 72	Ø 88	è 104	ø 120
1 0 0 1	9	25	© 41	1 57	É 73	Ù 89	é 105	ù 121
1 0 1 0	10	26	ª 42	º 58	Ê 74	Ú 90	ê 106	ú 122
1 0 1 1	11	27	« 43	» 59	Ë 75	Û 91	ë 107	û 123
1 1 0 0	12	28	¬ 44	¼ 60	Ì 76	Ü 92	ì 108	ü 124
1 1 0 1	13	29	- 45	½ 61	Í 77	Ý 93	í 109	ý 125
1 1 1 0	14	30	® 46	¾ 62	Î 78	Þ 94	î 110	þ 126
1 1 1 1	15	31	¯ 47	¿ 63	Ï 79	ß 95	ï 111	ÿ 127

NOTES:
- This character set can only be specified as a G1 character set with 96 characters.
- ADE 32, shown here as Sp, is the *no-break space*.
- ADE 45, shown here as -, is the *soft hyphen*.
- ADE 56, shown here as ›, is the *cedilla*.

6048-1

Figure 24. Multilingual (ASCII) Code Chart.

EBCDIC CODE CHART (Coax Option)

BINARY BITS	0,1	00					01					10					11				
	2,3	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
4,5,6,7	HEX 1 0	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F				
0000	0	NUL				SP	&	—						{	}	\	0				
0001	1		SBA					/		a	j	~		A	J		1				
0010	2		EUA							b	k	s		B	K	S	2				
0011	3		IC							c	l	t		C	L	T	3				
0100	4									d	m	u		D	M	U	4				
0101	5	PT	NL							e	n	v		E	N	V	5				
0110	6									f	o	w		F	O	W	6				
0111	7									g	p	x		G	P	X	7				
1000	8	GE		SA						h	q	y		H	Q	Y	8				
1001	9		EM	SFE					`	i	r	z		I	R	Z	9				
1010	A					¢	!	¦	:												
1011	B					.	$	,	#												
1100	C	FF	DUP	MF	RA	<	*	%	@												
1101	D	CR	SF			(	)	_	'												
1110	E		FM			+	;	>	=												
1111	F				SUB	|	¬	?	"												

4890-68A

Figure 25. EBCDIC Code Chart (for the North American Character Set on Terminals With Coax).

You can find EBCDIC code charts for language-dependent character sets in the Programmers Manual.

ASCII CODE CHART

BITS B4 B3 B2 B1	B7 B6 B5 = 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	SN 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

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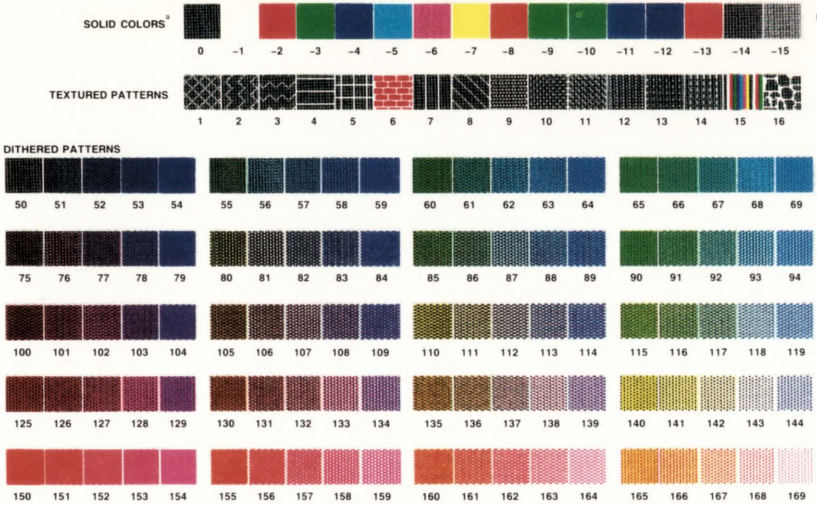
Figure 26. ASCII Code Chart (for the North American Character Set on Standard Terminals).

You can find ISO code charts for language-dependent character sets in the Programmers Manual.



[a] Each solid color pattern displays a color index (that is, Pattern -3 displays Index 3).

4981-33C

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