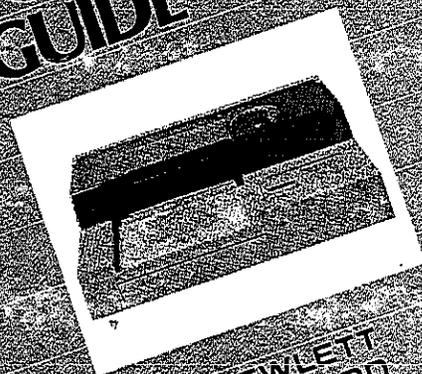


# HP 7550A GRAPHICS PLOTTER POCKET GUIDE



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## HP 7550A GRAPHICS PLOTTER POCKET GUIDE

### How To Use This Guide

This pocket guide is divided into two sections. The first section lists each HP-GL instruction in alphabetic order of the instruction's mnemonic. Also included are tables of default conditions, HP-GL errors, and device-control errors. If you know what the instruction does, but don't know the mnemonic, the index on the following pages groups the HP-GL instructions according to function. Refer to this index to find the instruction you need as well as its page number.

The second section of this guide lists each device-control instruction in alphabetic order of the escape sequence.

Syntax and parameter ranges are provided for each HP-GL and device-control instruction. The semicolon is included as the terminator for all HP-GL instructions. (However, a semicolon or the next mnemonic are each valid terminators. In an HP-IB configuration, a line feed character is also a valid terminator.) [TERM] means the terminator sent by the plotter at the end of an output response. It is CR LF in an HP-IB configuration, and CR or as set by an ESC.M instruction in an RS-232-C/CCITT V.24 configuration.

	Page
<b>AXES GROUP</b>	
TL Tick Length .....	20
XT X-Tick .....	21
YT Y-Tick .....	21

	Page
<b>CHARACTER/LABEL GROUP</b>	
BL Buffer Label .....	6
CA Designate Alternate Character Set .....	6
CC Character Chord Angle .....	6
CM Character Selection Mode .....	7
CP Character Plot .....	7
CS Designate Standard Character Set .....	7
DI Absolute Direction .....	7
DL Define Downloadable Character .....	8
DR Relative Direction .....	8
DS Designate Character Set into Slot .....	8
DT Define Label Terminator .....	9
ES Extra Space .....	9
IV Invoke Character Slot .....	11
LB Label .....	12
LO Label Origin .....	12
OL Output Label Length .....	15
PB Print Buffered Label .....	16
SA Select Alternate Character Set .....	18
SI Absolute Character Size .....	19
SL Character Slant .....	19
SM Symbol Mode .....	19
SR Relative Character Size .....	20
SS Select Standard Character Set .....	20
UC User-Defined Character .....	20

	Page
<b>CONFIGURATION GROUP</b>	
AF or AH Advance Page .....	5
AP Automatic Pen Operations .....	5
BF Buffer Plot .....	6
DF Default .....	8
GC Group Count .....	11

	Page
IM Input Mask .....	11
IN Initialize .....	11
IP Input P1 and P2 .....	11
IW Input Window .....	12
KY Define Key .....	12
NR Not-Ready .....	13
OG Output Group Count .....	14
OK Output Key .....	15
PG Page Feed .....	17
RO Rotate Coordinate System .....	18
RP Replot .....	18
SC Scale .....	18
WD Write to Display .....	21

	Page
<b>DIGITIZE GROUP</b>	
DC Digitize Clear .....	7
DP Digitize Point .....	8
OD Output Digitized Point and Pen Status .....	14

	Page
<b>DRAWING ATTRIBUTES</b>	
CV Curved Line Generator .....	7
FT Fill Type .....	10
LT Line Type .....	13
PT Pen Thickness .....	17
SM Symbol Mode .....	19
UF User-Defined Fill Type .....	21

	Page
<b>OUTPUT GROUP</b>	
OA Output Actual Position and Pen Status .....	13
OC Output Commanded Position and Pen Status .....	14
OD Output Digitized Point and Pen Status .....	14
OE Output Error .....	14
OF Output Factors .....	14
OG Output Group Count .....	14
OH Output Hard-Clip Limits .....	14
OI Output Identification .....	15
OK Output Key .....	15

	Page
OL Output Label Length .....	15
OO Output Options .....	15
OP Output P1 and P2 .....	15
OS Output Status .....	16
OT Output Carousel Type .....	16
OW Output Window .....	16

**PEN CONTROL GROUP**

AP Automatic Pen Operations .....	5
AS Acceleration Select .....	6
FS Force Select .....	10
PD Pen Down .....	16
PU Pen Up .....	17
SP Select Pen .....	19
VS Velocity Select .....	21

**POLYGON GROUP**

AA Arc Absolute .....	5
AR Arc Relative .....	5
CI Circle .....	6
CT Chord Tolerance .....	7
EA Edge Rectangle Absolute .....	9
EP Edge Polygon .....	9
ER Edge Rectangle Relative .....	9
EW Edge Wedge .....	10
FP Fill Polygon .....	10
PM Polygon Mode .....	17
RA Fill Rectangle Absolute .....	17
RR Fill Rectangle Relative .....	18
WG Fill Wedge .....	21

**VECTOR GROUP**

PA Plot Absolute .....	16
PD Pen Down .....	16
PR Plot Relative .....	17
PU Pen Up .....	17

**HP-GL Instruction Summary**

**AA, ARC ABSOLUTE**

AA X, Y, arc angle (, chord tolerance);

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none
arc angle	decimal	$-2^{23}$ to $2^{23} - 1$ degrees	none
chord tolerance	decimal	$-2^{23}$ to $2^{23} - 1$ current mode	5 degrees

**AF or AH, ADVANCE PAGE**

AF; or AH;

Parameter	Format	Range	Default
n	integer	$-2^{23}$ to $2^{23} - 1$	none

**AP, AUTOMATIC PEN OPERATIONS**

AP n; or AP;

Parameter	Format	Range	Default
n	integer	0-15	7

**AR, ARC RELATIVE**

AR X, Y, arc angle (, chord tolerance);

Parameter	Format	Range	Default
X- and Y-increments	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none
arc angle	decimal	$-2^{23}$ to $2^{23} - 1$ degrees	none
chord tolerance	decimal	$-2^{23}$ to $2^{23} - 1$ current mode	5 degrees

**AS, ACCELERATION SELECT**

*AS* pen acceleration (, pen number); or *AS*;

Parameter	Format	Range	Default
pen acceleration	integer	1-6	6
pen number	integer	1-8	all pens

**BF, BUFFER PLOT**

*BF*;

**BL, BUFFER LABEL**

*BL* c . . . c *term* or *BL term* (where *term* is the label terminator defined by the DT instruction)

Parameter	Format	Range	Default
c . . . c (up to 150 characters are buffered)	label	any character	none

**CA, DESIGNATE ALTERNATE CHARACTER SET**

*CA* set; or *CA*;

Parameter	Format	Range	Default
set	integer	-1, 0-19, 30-49	0

**CC, CHARACTER CHORD ANGLE**

*CC* chord angle; or *CC*;

Parameter	Format	Range	Default
chord angle	decimal	$-2^{23}$ to $2^{23} - 1$	5 degrees

**CI, CIRCLE**

*CI* radius (, chord tolerance);

Parameter	Format	Range	Default
radius	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none
chord tolerance	decimal	$-2^{23}$ to $2^{23} - 1$ current mode	5 degrees

6

**CM, CHARACTER SELECTION MODE**

*CM* switch mode (, fallback mode); or *CM*;

Parameter	Format	Range	Default
switch mode	integer	0-3	0
fallback mode	integer	0-1	0

**CP, CHARACTER PLOT**

*CP* spaces, lines; or *CP*;

Parameter	Format	Range	Default
spaces	decimal	$-2^{23}$ to $2^{23} - 1$	none
lines	decimal	$-2^{23}$ to $2^{23} - 1$	none

**CS, DESIGNATE STANDARD CHARACTER SET**

*CS* set; or *CS*;

Parameter	Format	Range	Default
set	integer	-1, 0-19, 30-49	0

**CT, CHORD TOLERANCE**

*CT* n; or *CT*;

Parameter	Format	Range	Default
n	integer	0 or 1	0

**CV, CURVED LINE GENERATOR**

*CV* n (, input delay); or *CV*;

Parameter	Format	Range	Default
n	integer	0 or 1	0
input delay	integer	$-2^{23}$ to $2^{23} - 1$ milliseconds	100 ms

**DC, DIGITIZE CLEAR**

*DC*;

7

**DF, DEFAULT***DF*;

See table on Page 28.

**DI, ABSOLUTE DIRECTION***DI* run, rise; or *DI*;

Parameter	Format	Range	Default
run ( $\cos \theta$ )	decimal	$-2^{23}$ to $2^{23} - 1$	1
rise ( $\sin \theta$ )	decimal	$-2^{23}$ to $2^{23} - 1$	0

**DL, DEFINE DOWNLOADABLE CHARACTER***DL* character number (*c*, pen control), X,Y (*...*) (*c*, pen control) (*...*); or *DL* character number; or *DL*;

Parameter	Format	Range	Default
character number	integer	33-126	none
pen control	integer	-128	none
X,Y coordinates	integer	-127-127	none

**DP, DIGITIZE POINT***DP*;**DR, RELATIVE DIRECTION***DR* run, rise; or *DR*;

Parameter	Format	Range	Default
run ( $\cos \theta$ )	decimal	$-2^{23}$ to $2^{23} - 1$	1% of $ P2_X - P1_X $
rise ( $\sin \theta$ )	decimal	$-2^{23}$ to $2^{23} - 1$	0% of $ P2_Y - P1_Y $

**DS, DESIGNATE CHARACTER SET INTO SLOT***DS* slot, set; or *DS*;

Parameter	Format	Range	Default
slot	integer	0-1 (HP modes) 0-3 (ISO modes)	0
set	integer	-1, 0-19, 30-49	0

8

**DT, DEFINE LABEL TERMINATOR***DT* label terminator; or *DT*;

Parameter	Format	Range	Default
label terminator	label	any character except <b>NULL, LF, ESC</b> , and (decimal equivalents 0, 10, 27, and 59, respectively)	<b>ETX</b> (decimal equivalent 3)

**EA, EDGE RECTANGLE ABSOLUTE***EA* X-coordinate, Y-coordinate;

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none

**EP, EDGE POLYGON***EP*;**ER, EDGE RECTANGLE RELATIVE***ER* X-increment, Y-increment;

Parameter	Format	Range	Default
X- and Y-increments	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none

**ES, EXTRA SPACE***ES* spaces (*c*, lines); or *ES*;

Parameter	Format	Range	Default
spaces	decimal	$-2^{23}$ to $2^{23} - 1$	0
lines	decimal	$-2^{23}$ to $2^{23} - 1$	0

9

**EW, EDGE WEDGE***EW* radius, start angle, sweep angle (, chord tolerance);

Parameter	Format	Range	Default
radius	decimal	$-2^{23}$ to $2^{23}-1$	none
start angle	decimal	$-2^{23}$ to $2^{23}-1$ degrees, modulo 360	none
sweep angle	decimal	$-2^{23}$ to $2^{23}-1$ degrees, truncated at $\pm 360$	none
chord tolerance	decimal	$-2^{23}$ to $2^{23}-1$ current mode	5 degrees

**FP, FILL POLYGON***FP*;**FS, FORCE SELECT***FS* pen force (, pen number); or *FS*;

Parameter	Format	Range	Default
pen force	integer	1-8	depends on carousel type
pen number	integer	1-8	all pens

**FT, FILL TYPE***FT* type(, spacing(, angle)); or *FT*;

Parameter	Format	Range	Default
fill type	integer	1-6	1
spacing	decimal	0 to $2^{23}-1$ current units	depends on fill type
angle	decimal	$-2^{23}$ to $2^{23}-1$ degrees, modulo 360	0 degrees

10

**GC, GROUP COUNT***GC* count number; or *GC*;

Parameter	Format	Range	Default
count number	integer	$-2^{23}$ to $2^{23}-1$	0

**IM, INPUT MASK***IM* E-mask value (, S-mask value(, P-mask value)); or *IM*;

Parameter	Format	Range	Default
E-mask value	integer	0-255	223
S-mask value	integer	0-255	0
P-mask value	integer	0-255	0

**IN, INITIALIZE***IN*;**IP, INPUT P1 AND P2***IP* P1<sub>x</sub>, P1<sub>y</sub>(, P2<sub>x</sub>, P2<sub>y</sub>); or *IP*;

Parameter	Format	Range	Default
X- and Y-coordinates	integer	$-2^{23}$ to $2^{23}-1$ plotter units	depends on paper size

**IV, INVOKE CHARACTER SLOT***IV* slot,(left); or *IV*;

Parameter	Format	Range	Default
slot	integer	0-1 (HP modes) 0-3 (ISO modes)	0
left	integer	0-1	0

11

**IW, INPUT WINDOW**

*IW* X<sub>1</sub>, Y<sub>1</sub>, X<sub>2</sub>, Y<sub>2</sub>; or *IW*;

Parameter	Format	Range	Default
X- and Y-coordinates	integer	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units if ENHANCED function key is on; plotter units if STANDARD function key is on	current hard-clip limits (depends on paper size)

**KY, DEFINE KEY**

*KY* key (, function); or *KY*;

Parameter	Format	Range	Default
key	integer	1-4	none
function	integer	0-12	none

**LB, LABEL**

*LB* c . . . c *term* (where *term* is the label terminator defined by the DT instruction)

Parameter	Format	Range	Default
c . . . c	label	any character	none

**LO, LABEL ORIGIN**

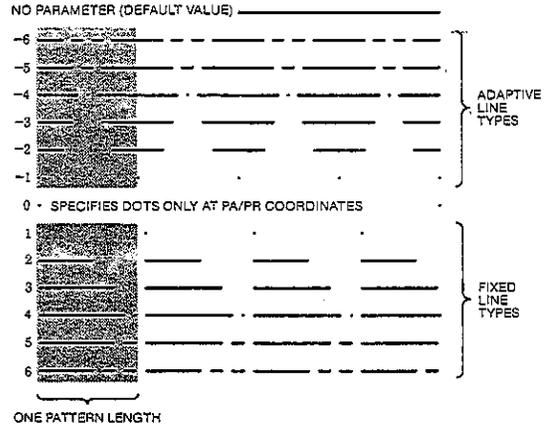
*LO* position number; or *LO*;

L03	L06	L09
L02	L05	L08
L01	L04	L07
L013	L016	L019
L012	L015	L018
L011	L014	L017

**LT, LINE TYPE**

*LT* pattern number (, pattern length); or *LT*;

Parameter	Format	Range	Default
pattern number	integer	-6-6	no parameter (solid line)
pattern length	decimal	0 to 2 <sup>23</sup> - 1 percentage	4% of the diagonal distance between P1 and P2



**NR, NOT-READY**

*NR*;

**OA, OUTPUT ACTUAL POSITION AND PEN STATUS**

*OA*;

Response: X,Y,P [TERM] — integers, in ASCII.

X,Y — in plotter units within current hard-clip limits.

P — 0, pen up or 1, pen down.

**OC, OUTPUT COMMANDED POSITION AND PEN STATUS***OC*;

Response: X,Y,P [TERM] — two decimals and one integer, in ASCII.

X,Y — in current units,  $-2^{23}$  to  $2^{23} - 1$ .

P — 0, pen up or 1, pen down.

**OD, OUTPUT DIGITIZED POINT AND PEN STATUS***OD*;

Response: X,Y,P [TERM] — integers, in ASCII.

X,Y — in STANDARD mode represent plotter units.  
in ENHANCED mode represent current units.

P — 0, pen up or 1, pen down.

**OE, OUTPUT ERROR***OE*;

Response: Error number [TERM] — a positive ASCII integer, 0-7.

**OF, OUTPUT FACTORS***OF*;

Response: 40,40 [TERM] — integers, in ASCII.

**OG, OUTPUT GROUP COUNT***OG*;

Response: Count number, escape status [TERM] — integers, in ASCII.

Count number —  $-2^{23}$  to  $2^{23} - 1$ .

Escape status — 0 or -1.

**OH, OUTPUT HARD-CLIP LIMITS***OH*;Response: X<sub>LL</sub>, Y<sub>LL</sub>, X<sub>UR</sub>, Y<sub>UR</sub> [TERM] — ASCII integers representing plotter units.**OI, OUTPUT IDENTIFICATION***OI*;

Response: 7550 firmware revision letter [TERM] — ASCII string, five characters.

**OK, OUTPUT KEY***OK*;

Response: Function key pressed [TERM] — integer in ASCII from 0-4.

**OL, OUTPUT LABEL LENGTH***OL*;

Response: Length, characters, line feeds [TERM] — in ASCII.

Length — longest line in the buffered label as decimal number with three places to the left and four places to the right of the decimal. In terms of the space dimension of CP cell.

Characters — integer, the number of printing characters and spaces in the longest line of the buffered label.

Line feeds — integer, net number of line feeds.

**OO, OUTPUT OPTIONS***OO*;Response: c,1,0,0,1,1,0,1 [TERM] — integers in ASCII.  
c — 0 to 3.**OP, OUTPUT P1 AND P2***OP*;Response: P1<sub>X</sub>, P1<sub>Y</sub>, P2<sub>X</sub>, P2<sub>Y</sub> [TERM] — ASCII integers representing plotter units.

**OS, OUTPUT STATUS***OS*;

Response: Status [TERM] — integer in ASCII in the range 0 to 255. Power-on status, 26.

**OT, OUTPUT CAROUSEL TYPE***OT*;

Response: Type, map [TERM] — integers in ASCII.  
 Type — -1 to 4.  
 Map — 0 to 255.

**OW, OUTPUT WINDOW***OW*;

Response: *X*<sub>LL</sub>, *Y*<sub>LL</sub>, *X*<sub>UR</sub>, *Y*<sub>UR</sub> [TERM] — integers, in ASCII.  
*X*, *Y* — in current units if ENHANCED function key is on.  
 in plotter units if STANDARD function key is on.

**PA, PLOT ABSOLUTE***PA X,Y (...)*; or *PA*;

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units	none

**PB, PRINT BUFFERED LABEL***PB*;**PD, PEN DOWN***PD X,Y (...)*; or *PD*;

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units	none

**PG, PAGE FEED***PG n*; or *PG*;

Parameter	Format	Range	Default
<i>n</i>	integer	-2 <sup>23</sup> to 2 <sup>23</sup> - 1	none

**PM, POLYGON MODE***PM n*;

Parameter	Format	Range	Default
<i>n</i>	integer	0-2	0

**PR, PLOT RELATIVE***PR X,Y (...)*; or *PR*;

Parameter	Format	Range	Default
X- and Y-increments	decimal	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units	none

**PT, PEN THICKNESS***PT* pen thickness; or *PT*;

Parameter	Format	Range	Default
pen thickness	decimal	0.1-5.0 millimetres	.3

**PU, PEN UP***PU X,Y (...)*; or *PU*;

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units	none

**RA, FILL RECTANGLE ABSOLUTE***RA* X-coordinate, Y-coordinate;

Parameter	Format	Range	Default
X- and Y-coordinates	decimal	-2 <sup>23</sup> to 2 <sup>23</sup> - 1 current units	none

**RO, ROTATE COORDINATE SYSTEM**

RO n; or RO;

Parameter	Format	Range	Default
n	integer	0 or 90 degrees	0

**RP, REPLOT**

RP n;

Parameter	Format	Range	Default
n	integer	1-99	1

**RR, FILL RECTANGLE RELATIVE**

RR X-increment, Y-increment;

Parameter	Format	Range	Default
X- and Y-increments	decimal	$-2^{23}$ to $2^{23} - 1$ current units	none

**SA, SELECT ALTERNATE CHARACTER SET**

SA;

**SC, SCALE**SC X<sub>min</sub>, X<sub>max</sub>, Y<sub>min</sub>, Y<sub>max</sub>; or SC;

Parameter	Format	Range	Default
X- and Y-ranges	integer	$-2^{23}$ to $2^{23} - 1$ user units	none

**SI, ABSOLUTE CHARACTER SIZE**

SI width, height; or SI;

Parameter	Format	Range	Default
width	decimal	$-2^{23}$ to $2^{23} - 1$ centimetres*	0.285 cm (A3/B-size paper) 0.187 cm (A4/A-size paper)
height	decimal	$-2^{23}$ to $2^{23} - 1$ centimetres*	0.375 cm (A3/B-size paper) 0.269 cm (A4/A-size paper)

\*excluding zero (0) and values approaching zero

**SL, CHARACTER SLANT**SL tan  $\theta$ ; or SL;

Parameter	Format	Range	Default
tangent $\theta$	decimal	$\pm 0.05$ to $\pm 2$ for default characters $\pm 0.05$ to $\pm 3.5$ for large characters	0 (no slant)

**SM, SYMBOL MODE**

SM character; or SM;

Parameter	Format	Range	Default
character	label	any printing character (decimal equivalents 33-126)	none

**SP, SELECT PEN**

SP pen number; or SP;

Parameter	Format	Range	Default
pen number	integer	0-8	0

**SR, RELATIVE CHARACTER SIZE**

*SR* width, height; or *SR*;

Parameter	Format	Range	Default
width	decimal	$-2^{23}$ to $2^{23}-1$ percentage*	0.75% of $ P2_X - P1_X $
height	decimal	$-2^{23}$ to $2^{23}-1$ percentage*	1.5% of $ P2_Y - P1_Y $

\*excluding zero (0) and values approaching zero

**SS, SELECT STANDARD CHARACTER SET**

*SS*;

**TL, TICK LENGTH**

*TL* *tp* (*t*); or *TL*;

Parameter	Format	Range	Default
<i>tp</i> and <i>tn</i>	decimal	0 to $2^{23}-1$ percentage	0.5% of $ P2_X - P1_X $ and of $ P2_Y - P1_Y $

**UC, USER-DEFINED CHARACTER**

*UC* (pen control,) X-increment, Y-increment (*c*, pen control) (*...*); or *UC*;

Parameter	Format	Range	Default
pen control	integer	STANDARD:* $\leq 99$ = pen up $\geq 99$ = pen down ENHANCED:* $\leq 9999$ = pen up $\geq 9999$ = pen down	pen up
X- and Y-increments	integer	STANDARD:* -98 to 98 ENHANCED:* -9998 to 9998 (both in primitive grid units)	none

\*The ranges depend on the setting of the front-panel STANDARD/ENHANCED function key, as shown. The pen control parameters cannot exceed the plotter's range of  $-2^{23}$  to  $2^{23}-1$ .

**UF, USER-DEFINED FILL TYPE**

*UF* *gap1* (*c*, *gap2*, ... *gap20*); or *UF*;

Parameter	Format	Range	Default
<i>gap</i>	integer	0 to $2^{23}-1$	none

**VS, VELOCITY SELECT**

*VS* pen speed (*c*, pen number); or *VS*;

Parameter	Format	Range	Default
pen speed	integer	1-80	depends on carousel type
pen number	integer	1-8	all pens

**WD, WRITE TO DISPLAY**

*WD* *c...c term* or *WD term* (where *term* is the label terminator defined by the DT instruction)

Parameter	Format	Range	Default
<i>c...c</i>	label	any character from (up to 32)	none decimal equiv. 32 to 95

**WG, FILL WEDGE**

*WG* radius, start angle, sweep angle (*c*, chord tolerance);

Parameter	Format	Range	Default
radius	decimal	$-2^{23}$ to $2^{23}-1$ current units	none
start angle	decimal	$-2^{23}$ to $2^{23}-1$ degrees, modulo 360	none
sweep angle	decimal	$-2^{23}$ to $2^{23}-1$ degrees, truncated at $\pm 360$	none
chord tolerance	decimal	$-2^{23}$ to $2^{23}-1$ current mode	5 degrees

**XT, X-TICK**

*XT*;

**YT, Y-TICK**

*YT*;

## Device-Control Instruction Summary

This section lists the formal syntax for device-control instructions in alphabetical order of the escape sequence. All instructions apply to both the HP-IB and RS-232-C/CCITT V.24 configurations unless otherwise noted in the title.

### SET PLOTTER CONFIGURATION

**ESC . @** [(**<DEC>**);(**<DEC>**)]:

Parameters: **<DEC>** — Specifies logical I/O buffer size (0-12800 bytes).

**<DEC>** — Decimal value 0-127. Bits 0, 1, and 4 apply to RS-232-C only.

**Bit 0.** Logic state 0: Disable hardware handshake (ignore DTR line, pin 20). Logic state 1: Enable hardware handshake (utilize DTR line, pin 20).

**Bit 1.** Logic state 0: Computer holds off data from the plotter using the CTS and DSR lines (pins 5 and 6). Logic state 1: Computer does not hold off data from the plotter using the CTS and DSR lines (pins 5 and 6).

**Bit 2.** Logic state 0: Select parse monitor mode. Logic state 1: Select receive monitor mode.

**Bit 3.** Logic state 0: Disable monitor mode. Logic state 1: Enable the monitor mode selected by bit 2.

**Bit 4.** Logic state 0: Disable block I/O error checking. Logic state 1: Enable block I/O error checking.

### OUTPUT IDENTIFICATION

**ESC . A**

Response: **<ASC>**,**<ASC>**[**TERM**] — 7550A, firmware revision level (ASCII strings).

### OUTPUT BUFFER SPACE

**ESC . B**

Response: **<DEC>**[**TERM**] — 0 to 12800 bytes.

### OUTPUT EXTENDED ERROR

**ESC . E**

Response: **<DEC>**[**TERM**] — 0 (no error) or 10-18.

### SET HANDSHAKE MODE 1 (RS-232-C only)

**ESC . H** [(**<DEC>**);(**<ASC>**);  
(**<ASC>** (;...**<ASC>**))]:

Parameters: **<DEC>** — Data block size.

**<ASC>** — Enquiry character.

**<ASC>**...**<ASC>** — Acknowledgment string of 1 to 10 characters.

### SET HANDSHAKE MODE 2 (RS-232-C only)

**ESC . I** [(**<DEC>**);(**<ASC>**);  
(**<ASC>** (;...**<ASC>**))]:

Parameters: **<DEC>** — Data block size or Xoff threshold level.

**<ASC>** — Enquiry character or omitted for Xon-Xoff.

**<ASC>**...**<ASC>** — Xon trigger character or acknowledgment string of 1 to 10 characters.

Independent of Set Output Mode, **ESC . M**.

**ABORT DEVICE CONTROL (RS-232-C only)****ESC . J****ABORT GRAPHICS****ESC . K****OUTPUT BUFFER SIZE WHEN EMPTY****ESC . L**

Response:  $\langle \text{DEC} \rangle [\text{TERM}]$  — 0-12800 bytes, or as set by ESC . @. Not output until the buffer is empty.

**SET OUTPUT MODE (RS-232-C only)**

**ESC . M** [ $\langle \text{DEC} \rangle$ ]; $\langle \text{ASC} \rangle$ ; $\langle \text{ASC} \rangle$ ;  
 $\langle \text{ASC} \rangle$ ; $\langle \text{ASC} \rangle$ ];

Parameters:  $\langle \text{DEC} \rangle$  — Turnaround delay, 0-9999 milliseconds.  
 $\langle \text{ASC} \rangle$  — Output trigger character, ASCII 0-126.  
 $\langle \text{ASC} \rangle$  — Echo terminate character, ASCII 0-126.  
 $\langle \text{ASC} \rangle$ ;  $\langle \text{ASC} \rangle$  — 1 or 2 output terminators. ASCII 0-127, 0 terminates string.  
 $\langle \text{ASC} \rangle$  — Output initiator character, ASCII 0-127.

**SET EXTENDED OUTPUT AND HANDSHAKE MODE (RS-232-C only)**

**ESC . N** [ $\langle \text{DEC} \rangle$ ]; $\langle \text{ASC} \rangle$ ... $\langle \text{ASC} \rangle$ ];

Parameters:  $\langle \text{DEC} \rangle$  — Intercharacter delay, 0-9999 milliseconds.  
 $\langle \text{ASC} \rangle$  ...  $\langle \text{ASC} \rangle$  — Xoff trigger characters or immediate response string of 1 to 10 characters, ASCII 0-127, 0 terminates string.

**OUTPUT EXTENDED STATUS****ESC . O**

Response:  $\langle \text{DEC} \rangle [\text{TERM}]$  — Status, decimal value 0-1775.

**SET HANDSHAKE MODE (RS-232-C only)****ESC . P** ( $\langle \text{DEC} \rangle$ ):

Parameter:  $\langle \text{DEC} \rangle$  — Selects standard handshake:

- 0 none
- 1 Xon-Xoff
- 2 ENQ/ACK
- 3 hardwire

**SET MONITOR MODE****ESC . Q** ( $\langle \text{DEC} \rangle$ ):

Parameter:  $\langle \text{DEC} \rangle$  — 0 disables monitor mode  
 1 enables parse monitor mode  
 2 enables receive monitor mode

**RESET****ESC . R**

Note: Should be followed by ESC . L.

**OUTPUT CONFIGURABLE MEMORY SIZE****ESC . S** ( $\langle \text{DEC} \rangle$ ):

Parameter:  $\langle \text{DEC} \rangle$  — 0 requests total memory available  
 1 requests current I/O buffer size  
 2 requests current polygon buffer size  
 3 requests current downloadable character buffer size  
 4 requests current replot buffer size  
 5 requests current vector buffer size

Response:  $\langle \text{DEC} \rangle [\text{TERM}]$  — 0 to 12800 bytes.

**ALLOCATE CONFIGURABLE MEMORY**

ESC . T [(**<DEC>**);(**<DEC>**);(**<DEC>**);  
(**<DEC>**);(**<DEC>**)]:

Parameters: **<DEC>** — I/O buffer size: 2 to 12752  
**<DEC>** — polygon buffer size: 4 to 12754  
**<DEC>** — downloadable character buffer size:  
 0 to 12750  
**<DEC>** — replot buffer size: 0 to 12750  
**<DEC>** — vector buffer size: 44 to 12794

Note: Should be followed by ESC . L.

**END FLUSH MODE**

ESC . U

**PLOTTER-ON**

ESC . ( or ESC . Y

**PLOTTER-OFF**

ESC . ) or ESC . Z

**HP-GL ERRORS**

Error Number	Displayed Message
1	Command not recognized
2	Wrong number of parameters
3	Bad parameter
5	Unknown character set
6	Position overflow
7	Buffer overflow

**DEVICE-CONTROL ERRORS**

Error Number	Displayed Message
10	Invalid I/O output request
11	Invalid byte following ESC .
12	Invalid byte in device-control instruction
13	Out-of-range parameter
14	Too many parameters
15	Error in transmission
16	I/O buffer overflow
17	Baud Rate mismatch
18	Indeterminate I/O error

## DEFAULT CONDITIONS

Function	Equivalent Instruction	Default Condition
Pen control	AP;	Automatic as follows: <ul style="list-style-type: none"> <li>• Lift or store a motionless pen after 15 seconds for transparency fiber-tip pens or drafting pens, or after 65 seconds for paper fiber-tip pens and roller-ball pens</li> <li>• Select pen only when required to draw</li> </ul>
Label buffer	BL, ETX	Cleared
Alternate set	CA 0;	Character set 0
Character selection mode	CM;	HP 7-bit mode
Standard set	CS 0;	Character set 0
Chord tolerance	CT;	Set to angle mode for AA, AR, CI, and WG instructions
Character chord	CC;	Set variable-space font chord angle to 5 degrees
Digitize clear	DC;	Clear DP instruction and return to current display
Downloadable character buffer	DL;	Cleared
Relative direction	DR 1, 0;	Horizontal characters
Label terminator	DT;	ETX (decimal equivalent 3)
Extra space	ES 0, 0;	No extra space between characters
Fill type, spacing, and angle	FT;	<ul style="list-style-type: none"> <li>• Type 1, solid bidirectional fill</li> <li>• 1% of the diagonal distance between P1 and P2</li> <li>• 0 degrees</li> </ul>
Mask value	IM 223, 0, 0;	Recognizes all defined errors
Input window	IW;	Set to hard-clip limits
Label origin	LO 1;	Standard labeling starting at current position
Line type and pattern length	LT;	<ul style="list-style-type: none"> <li>• Type 1, solid line</li> <li>• 4% of the diagonal distance between P1 and P2</li> </ul>
Plotting mode	PA;	Absolute
Polygon mode	PM0, PM2;	Polygon buffer cleared
Pen thickness	PT;	Thickness based on current carousel
Scaling	SC;	User-unit scaling off
Character slant	SL 0;	0 degrees
Symbol mode	SM;	Off
Relative size	SR;	<ul style="list-style-type: none"> <li>• Character width = 0.75% of <math> P2x - P1x </math></li> <li>• Character height = 1.5% of <math> P2y - P1y </math></li> </ul>
Select set	SS;	Select standard character set
Tick length	TL;	$tp = tn = 0.5\%$ of $ P2x - P1x $ for Y-tick and $0.5\%$ of $ P2y - P1y $ for X-tick
User-defined fill type	UF;	Solid bidirectional fill

**Additional Default Conditions:**

- The carriage-return point for labeling instructions is updated to the current pen position.
- PD and PU instructions with parameters are defaulted to be forms of the PA instruction.
- Although character size is defaulted as if "SI;" were executed, subsequent changes to the scaling points P1 and P2 will cause the character size to vary as if "SR;" were executed.

**Conditions Not Affected by DF**

- Locations of P1 and P2
- Current pen and its position
- Pen speed, force, and acceleration
- 90-degree rotation or axis alignment
- Curved line generator (CV instruction)
- Setting of these front-panel conditions: AUTO FEED key, standard/enhanced, HP-IB address, eavesdrop/standalone, handshake, modem/direct, full/half duplex, parity, 7-bit/8-bit, and baud rate
- Function key definitions established by the KY and WD instructions

Conditions You Can Store in the Plotter's Nonvolatile Memory	Factory-Set Default Conditions
HP-IB Address	05
Standard/Enhanced Mode	Standard
Eavesdrop/Stand Alone Mode	Eavesdrop
Handshake: None/Xon-Xoff/ Enq-Ack/Hardwire	None
Direct/Modem Mode	Direct
Duplex: Full/Half	Full
Parity: 7 Bits/8 Bits Off/Even/Odd	8 Bits Off
Baud Rate	2400
Manual/Automatic Paper Load	Manual