DRAWINGSLATE I AND II COMMANDS

Power Up Default
Format #23
Run mode
9600 8 none 1
1000 lines per inch and 125 point per second

Operating Modes

Run Mode: Digitizer outputs coordinate data continuously.

Track Mode: Digitizer outputs coordinate data when button is down.

Line Mode: Digitizer outputs coordinate data points when a button is down; plus one when the button is released.

Point Mode: One point is sent when a button is pressed.

Increment Mode Filter: Puts a movement filter on data in any mode. The transducer must move N counts before the data can be sent. Then both axis data are updated. If out of proximity data is enabled in increment mode, two data point may be sent on leaving proximity.

Grid Update Mode Filter: Similar to ***Increment Mode Filter***, except only the axis that the inc occurred in is updated; the other axis is its old value.

Prompt Mode Modifier: Places the additional restriction on data transmission that the host must transmit a prompt character to the tablet for each data point output. All other rules of normal operation apply. The prompt character is "?". Prompting is a feature, which operates in conjunction with any of the above standard modes.

Send Data Out of Proximity Mode Modifier: If this flag is set, coordinate data will be sent when it meets the output conditions in or out of the active area. Cordless units may not respond to button information until cursor is close to tablet.

NOTE: This command should be sent after the mode commands.

Send Data in Margin: If this flag is set, coordinate data point will be sent when it meets the output conditions in the active area or when in margins.

NOTE: Margins on some of the tablets are very small and large, leaving the table than coming in to the tablet.

Delta Mode: (mm mode only) Send relative data.

Output Formats: Shows only a sub set of formats for these products.

NOTE: Recommended for use with format 20, 23 or 7 for new drivers.

The following codes are used in describing the output formats:

C Cn	***Cursor Status***. In ASCII formats, indicates a single status character. ***Cursor Status Bit***. In binary formats, a bit representing cursor status. The highest-numbered "Cn" is the MSB and "C0" for the LSB.
CACB 2 CHARACTER CURSOR STATUS	
, CR LF T0 X Y Xn Yn pn pp + [-]	ASCII comma. ASCII carriage return (HEX 0D). CR can be inhibited by CR menu bit. ASCII Line Feed HEX 0A [LF] is selected by, if enable menu bit. Tablet status bit 0 or 1 set by command. ***Data Digit***. In ASCII formats, a numeric character representing coordinate data. The number of X symbol represents the number of allowable digits. ***Data Bit***. In binary formats, a bit representing coordinate data. The highest-numbered "n" is the MSB. Pressure pen data 0-7. Pressure pen data ASCII. Sign character "space"=pos "-"=neg. IF NEG IT, ADD A "-" CHARACTER

ASCII Formats

31090, 31120 or 31180 with Resolution <510 LPI

0	XXXX	YYYY	C CR [LF]	
3	XXXX	YYYY	C CR [LF]	
3 DELTA	+XXXX	+YYYY	C CR [LF]	
15	+XXXXX	+YYYY	CACB	T0 CR [LF]

33120 or 33180 with Resolution >508 LPI or 4x5

0	XXXXX	YYYYY	C CR [LF]	
3	XXXXX	YYYYY	C CR [LF]	
3 DELTA	+XXXXX	+YYYYY	C CR [LF]	
15	+XXXXX	+YYYYY	CACB	T0 CR [LF]

Any Size with Resolution >1279

4 9100 1	T M C XXXXXX YYYYYY CR [LF]
9 9100 2	XXXXXX, YYYYYY, T M CCR [LF]
6 9100 3	C P XXXXXX YYYYYY CR [LF]
0 2A	XXXXXX, Y YYYYY, C CR [LF]
3 mA	XXXXXX, Y YYYYY, C CR [LF]
3 DELTA	+XXXXXX, +YYYYYY, C CR [LF]
15	+XXXXX, +YYYYYY, CACB, T0 CR [LF]

Any Size

4 9100 1	T M C XXXXX YYYYY CR [LF]
5 9100 2	XXXXX, YYYYY, T M C CR [LF]
6 9100 3	C P XXXXX, YYYYY CR [LF]
7 9100 4	SP XX.XXX, SP YYYY.YY, TM CR [LF] 1000 LPI
	SP XXXX.XX, SP YYYY.YY, TMC CR [LF] 100 LPmm
	SP XXXX.X, SP YYYY.Y, TMC CR [LF] 10 LPmm
	SP XXXXX. , SP YYYYY. , TMC CR [LF] OTHER
8	+XX.XXX, +YY.YYY, CACB, T0 CR [LF] 1000 LPmm
	+XXXX.XX, +YYYY.YY, CACB, T0 CR [LF] 100 LPmm
	+XXXX.X, +YYYY.Y, CACB, T0 CR [LF] 10 LPmm
	+XXXXX. , +YYYYY. , CACB , T0 CR [LF] OTHER
16	+XXXX.XXX, +YYYY.YYY, CACB, T0 CR [LF]

Added in Mod 4 (Firmware 70181) to Support Pressure Pen in Summa Mode

3	X...X, Y...Y, PPPPP, C CR [LF]	Pressure 0 to 127
15	+X...X, Y...Y, PPPPP, CACB, TO, CR, [LF]	Pressure 0 to 255
8	+X....X, +Y...Y, PPPPP, CA, CB, TO CR [LF]	Pressure 0 to 255

Binary Formats

20 Format ATF

	7	6	5	4	3	2	1	0	
1	1	C4	C3	C2	C1	C0	X15	X14	
2	0	X13	X12	X11	X10	X9	X8	X7	
3	0	X6	X5	X4	X3	X2	X1	X0	
4	0	0	PR	X17	X16	Y16	Y15	Y14	PR 0 = IN PROX 1 = OUT OF PROX
5	0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	
6	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	
7	0	XT6	XT5	XT4	XT3	XT2	XT1	XT0	TILT 40 TO 3F HEX 00 = VERT.
8	0	YT6	YT5	YT4	YT3	YT2	YT1	YT0	
9	0	P6	P5	P4	P3	P2	P1	P0	PRESSURE 0 TO 127
10	0	H6	H5	H4	H3	H2	H1	H0	HEIGHT 0 TO 127

23 Format (2G) Also 24 and 27 (Cursor Coding is Different between 23, 24 and 27)

	7	6	5	4	3	2	1	0	
1	1	C4	C3	C2	C1	C0	X15	X14	
2	0	X13	X12	X11	X10	X9	X8	X7	
3	0	X6	X5	X4	X3	X2	X1	X0	
4	0	0	PR	X17	X16	Y16	Y15	Y14	PR 0 = IN PROX 1 = OUT OF PROX
5	0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	
6	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	
7	0	TX6	TX5	TX4	TX3	TX2	TX1	TX0	
8	0	TY6	TY5	TY4	TY3	TY2	TY1	TY0	x tilt +/- 64.0 is vert.

23 Format (2G) from 0 to 1 FH (0 to 31) Only If Pressure Pen Data is Enabled

	7	6	5	4	3	2	1	0	
1	1	P4	P3	P2	P1	P0	X15	X14	PRESSURE 0 TO 31
2	0	X13	X12	X11	X10	X9	X8	X7	
3	0	X6	X5	X4	X3	X2	X1	X0	
4	0	0	PR	X17	X16	Y16	Y15	Y14	PR 0 = IN PROX 1 = OUT OF PROX
5	0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	
6	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	

28 Format (2B) Also 25 (Cursor Coding Different between 25 and 28)

	7	6	5	4	3	2	1	0	
1	0	1	C3	C2	C1	C0	C4	PR	PR 0 = IN PROX 1 = OUT OF PROX
2	0	0	X5	X4	X3	X2	X1	X0	On format 28 no c4 bit
3	0	0	X11	X10	X9	X8	X7	X6	
4	0	0	Y5	Y4	Y3	Y2	Y1	Y0	
5	0	0	Y11	Y10	Y9	Y8	Y7	Y6	

30 Format

	7	6	5	4	3	2	1	0	
1	1	PR	T0	X14*	Y14*	C2	C1	C0	PR 0 = IN PROX 1 = OUT OF PROX
2	0	X6	X5	X4	X3	X2	X1	X0	
3	0	X13	X12	X11	X10	X9	X8	X7	
4	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	
5	0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	
6	0	p6	p5	p4	p3	p2	p1	p0	If pressure is enabled 0 to 127

30 Format DELTA

	7	6	5	4	3	2	1	0	
1	1	PR	T0	X14*	Y14*	C2	C1	C0	PR 0 = IN PROX 1 = OUT OF PROX
2	0	X6	X5	X4	X3	X2	X1	X0	
3	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	

NOTE: Can only get to DELTA format using mm commands. X14* and Y14* are set high (1) for + and low (0) for X14, Y14 not.

31 Format

	7	6	5	4	3	2	1	0	
1	0	1	0	0	T2	T1	T0	PR	PR 0 = IN PROX 1 = OUT OF PROX
2	0	0	0	C4	C3	C2	C1	C0	t2, 1, and 0 = 100 or 000 (lectra)
3	0	0	X5	X4	X3	X2	X1	X0	
4	0	0	X11	X10	X9	X8	X7	X6	
5	0	0	0	X16	X15	X14	X13	X12	
6	0	0	Y5	Y4	Y3	Y2	Y1	Y0	
7	0	0	Y11	Y10	Y9	Y8	Y7	Y6	
8	0	0	0	Y16	Y15	Y14	Y13	Y12	
9	0	0	p5	p4	p3	p2	p1	p0	If pressure is enabled 0 to 255
10	0	0	0	0	0	0	p7	p6	
11	0	0	0	0	0	0	0	0	

Cursor Coding

Pen	0	20, 23, 24, 27 and 28	31	4, 5, 6 and 7	4, 5, 6 and 7	8, 15 and 16
up	0	00000	00000	0	U	00
tip (0)	1	00001	00001	1	0	01
sw1	2	00010	00010	2	1	02
sw2	4	00100	00011	3	2	03
0+1	3	00011	00001	3	0	01
0+2	5	00101	00101	3	4	05
1+2	6	00110	00110	3	5	06
0+1+2	7	00111	00001	3	0	01

4 Button Cursor	0	20, 23, 24, 27 and 28	31	4, 5, 6 and 7	4, 5, 6 and 7	8, 15 and 16
up	0	00000	00000	0	U	00
0	1	00001	00001	1	0	01
1	2	00010	00010	2	1	02
2	4	00100	00011	3	2	03
3	8	01000	00100	4	3	04
0+1	3	00011	00001	3	0	01
0+2	5	00101	00101	3	4	05
1+2	6	00110	00110	3	5	06
0+1+2	7	00111	00001	3	0	01

0+3	9	01001	00001	5	0	01
1+3	:	01010	00010	6	1	02
0+1+3	;	01011	00001	7	0	01
2+3	<	01100	00011	7	2	03
0+2+3	=	01101	00001	7	0	01
1+2+3	>	01110	00010	7	1	02
0+1+2+3	?	01111	00001	7	0	01

16 Button Cursor	0	20 and 23	24, 27, 28 and 31	3, 29 and 30	4, 5, 6 and 7	8, 15 and 16
up	0	00000	00000	0	U	00
0	1	10000	00001	1	0	01
1	2	10001	00010	2	1	02
2	4	10010	00011	3	2	03
3	3	10011	00100	4	3	04
4	5	10100	00101	5	4	05
5	6	10101	00110	6	5	06
6	7	10110	00111	7	6	07
7	8	10111	01001	0	7	08
8	9	11000	01010	1	8	09
9	:	11001	01011	2	9	10
A	;	11010	01100	3	A	11
B	<	11011	01101	4	B	12
C	=	11100	01110	5	C	13
D	>	11101	01111	6	D	14
E	?	11110	10000	7	E	15
F	@	11111		0	F	16

Commands (RS-232)

NOTE: One byte commands cannot be inhibited by the one byte command enable menu bit.

DC1 (X ON) start transmission after a x off.
DC3 (X OFF) stop transmission on the next chapter.
BEL (CNT G) Beep or BEL makes the tablet beep if beeper is installed.
"?" is the default prompt character.

Tablet can respond to 2x00 commands in the 2000/9100 subsets.

2000 Commands (2x00)

NOTE: Use commands below only when in 2000 mode/formats. Can be inhibited by one byte enable menu bit.

@Track mode 1 pps	H run mode 1 pps	P point mode
A track mode 5 pps	I run mode 5 pps	Q point prompt mode
B track mode 10 pps	J run mode 10 pps	R run prompt mode
C track mode 20 pps	K run mode 20 pps	S halt or stop mode
D track mode 40 pps	L run mode 40 pps	T track prompt mode
E track mode 75 pps	M run mode 75 pps	
F track mode 100 pps	N run mode 100 pps	
G track mode 125 pps	O run mode 125 pps	

MM and 2000 Commands

NOTE: Commands work in both mm and 2000 mode/formats. Do not write drivers using these to be 2x00 and 9x00 compatible. Commands below can be inhibited by the one byte enable menu bit.

a Send size.
b Set origin to upper left.
c Set origin to lower left. On 6x9, b set vertical and c set horizontal.

d	100 lpi	i	20 lpmm	n	2 lpi
e	200 lpi	j	1000 lpi	o	50 lpmm (1270 lpi)
f	10 lpmm	k	1270 lpi (2x00 mode only)	p	4 lpi
g	400 lpi			q	40 lpmm
h	400 lpi	l	1 lpi		

MM Commands

NOTE: Use below commands only when in mode/formats. Can be inhibited by the one byte enable menu bit.

nul Reset (only in MM formats). Note the nul reconfigure in tablet a.

0	TABLET BIT TO 0	1	TABLET BIT TO 1
@	RUN MODE	A	TRACK
B	POINT MODE	D	REMOTE MODE (PROMPT)
E	SET DELTA MODE	F	CLEAR DELTA MODE

G h	AXIS UPDATE bin ASCII	I h	INC MODE
Q	140 100 DATA RATE		
R	75 50		
S	25 20		
T	7 7		

9100/2500 Commands

```
ESC % A [0/1] cr    disable/enable data out of port a
ESC % C n h n n [0|1]cr        set communication parameters
              | | | | -  disable /enable cts handshaking (added to thin)
              | | | +-   stop bits 1
              | | +----  data bits 7 or 8
              | +-------  parity  N,E,O,M,S(none, even, odd, mark, space)
             +---------  baud rate  n=0 to 4
                         0=19200 1=9600 2=4800 3=2400 4=1200
ESC % H cr          halt mode
ESC % I cr          inc track mode
ESC % I R cr        inc run mode
ESC % I T cr        inc track mode
ESC % I U cr        inc line mode
ESC % J R n,0 cr    set resolution (n=1 TO 2540 LPI)
ESC % J M n,0 cr    set res (n=1 to 100)
ESC % J L L cr      set origin to lower left
ESC % J L R cr      set origin to lower right
ESC % J U L cr      set origin to upper left
ESC % J U R cr      set origin to upper right
ESC % J C cr        set origin to center
ESC % J O cr dpoint         set origin to next point Digitized
ESC % J P [0|1|2|3|4|5|6|7]         set portrait mode
ESC % L cr          set/clear line feed on data
ESC % L 0 cr        disable line feed on data
ESC % L 1 cr        enable line feed on data
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ESC % N [0/1] cr	send data in margins
ESC % P cr	point mode
ESC % Q cr	clear prompt mode
ESC % Q h cr	set prompt mode and prompt character= h
ESC % R cr	run mode
ESC % T cr	track mode
ESC % U cr	line mode
ESC % V E cr	set up default settings in all 4 RECALL BLOCKS
ESC % V F cr	make current switch settings active Clear set up mode
ESC % V R cr	reset tablet
ESC % V R n CR	recall bank n and make setting active n= 1 to 3 and clear setup mode
ESC % V R 5 CR	RECALLS CALCOMP SOFTWARE SETTING
ESC % V R 6 CR	RECALLS format 20 aft on
ESC % V S cr	send tablet size
ESC % V V n CR	set EXTRA data modes. n= 00110xxxb
	"1" * tilt correct
	"2" * tilt data
	"4" * height data
ESC % V A [0/1]	PRESSURE PEN DATA 0=OFF 1=ON, ON FORMATS WITH OPTIONAL PRESSURE DATA FIELDS
ESC % V A [2/3]	tilt to PRESSURE PEN DATA 2=OFF 3=ON
ESC % V A V n	SET PRESSURE PEN LEVEL N = 0 TO 255
ESC % V 0	LED 2 OFF
ESC % V 1	LED 2 ON
ESC % V 8	DISABLE BEEPER
ESC % V 9	ENABLE BEEPER
ESC % V 4	DISABLE BEEPER CLICK ON PEN DOWN
ESC % V 5	ENABLE BEEPER CLICK ON PEN DOWN
ESC % V m [0|1] cr	set/clear enable menu
ESC % V f [0|1] cr	set/clear enable function blocks

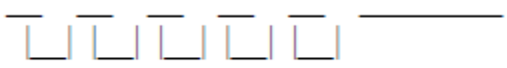
ESC % W n cr set data rate (n=1 to 125)
ESC % X n cr set inc value (N=0 TO 64000)
ESC % Y n cr set inc value (n= 0 to 64000)
ESC % Z [0/1] cr # send data out of proximity
ESC % Z 2/3 CR 3= SET LOW PROXIMITY 2= SET HIGH PROXIMITY
ESC % ^ n cr set format number (n=0 to 31 or "m" or "M")
0= 2000 ASCII 3=mm ascii 4= 9100 #1 5= 9100 #2
6= 9100 #3 7= 9100 #4 20=cal bin with ATF
23= g bin 29 mm bin delta 30 mm bin
31=microgrid bin
ESC % _ _ V CR firmware part numbers " 70xxxA 16XXX CR LF"

ESC % _ _ p CR prouduct id "CALCOMP 3100 or CalComp 3200 "

CTS

CTS will stop next data byte out if bit in menu is enabled. CTS toggled in software setup mode, will send a "T" at *.

DTR

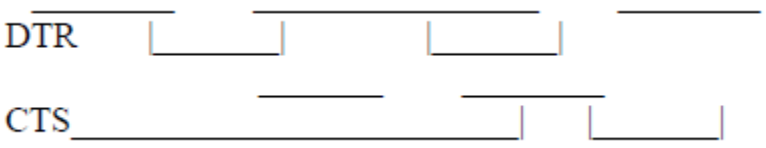


DTR toggled high low high five times in one second puts tablet in "software setup mode" where the output buffer is flushed, data port is disabled and commutations is set to 9600 n 8 1. To exit this mode, use the "ESC % VR n" command or VF command and A1 command.

NOTE: Minimum on/off time for toggle is 1/18 of a second (IBM timer tic).

Plug and Play (WINDOWS 95) 4X5 ONLY

*.2+/- .035 SEC



DTR goes high and then within 150 msec to 250 msec cts goes high. Then the tablet sends "plug and play" string at 1200 baud 7 data no parity two stop bits. String could be

"(01CAL0001\\TABLET\\CalComp DrawingSlate 4x5 xx) cr if" or similar. See plug and play spec for more information.

Binary Formats

20 Format AFT 4X5 ONLY

	7	6	5	4	3	2	1	0	
1	1	C4	C3	C2	C1	C0	X15	X14	
2	0	X13	X12	X11	X10	X9	X8	X7	
3	0	X6	X5	X4	X3	X2	X1	X0	
4	0	plsb	PR	X17	X16	Y16	Y15	Y14	PR 0 = IN PROX 1 = OUT OF PROX
5	0	Y13	Y12	Y11	Y10	Y9	Y8	Y7	plsb = pressure lsb added 70210 rev b
6	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0	
7	0	XT6	XT5	XT4	XT3	XT2	XT1	XT0	TILT 40 TO 3F HEX 00 = VERT.
8	0	YT6	YT5	YT4	YT3	YT2	YT1	YT0	
9	0	P6	P5	P4	P3	P2	P1	P0	PRESSURE 0 TO 127
10	0	H6	H5	H4	H3	H2	H1	H0	HEIGHT 0 TO 127

31 Format

	7	6	5	4	3	2	1	0	
1	0	1	0	0	T2	T1	T0	PR	PRO 0 = IN PROX 1 = OUT OF
2	0	0	0	C4	C3	C2	C1	C0	PROX
3	0	0	X5	X4	X3	X2	X1	X0	t2, 1, 0 = 100 or 000 (lectra)
4	0	0	X11	X10	X9	X8	X7	X6	
5	0	0	0	X16	X15	X14	X13	X12	
6	0	0	Y5	Y4	Y3	Y2	Y1	Y0	
7	0	0	Y11	Y10	Y9	Y8	Y7	Y6	
8	0	0	0	Y16	Y15	Y14	Y13	Y12	
9	0	0	p5	p4	p3	p2	p1	p0	If pressure is enabled 0 to 255
10	0	0	0	0	0	0	p7	p6	
11	0	0	0	0	0	0	0	0	