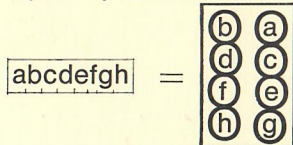


DISPLAY CODES

20	(sp)	40	@	(0)
21	X	41	A	(1)
22	≡	42	B	(2)
23	#	43	C	(3)
24	\$	44	D	(4)
25	%	45	E	(5)
26	&	46	F	(6)
27	'	47	G	(7)
28	(48	H	(8)
29)	49	I	(9)
2A	*	4A	J	(A)
2B	+	4B	K	(B)
2C	,	4C	L	(C)
2D	-	4D	M	(D)
2E	.	4E	N	(E)
2F	/	4F	O	(F)
30	0	50	P	(P)
31	1	51	Q	(Q)
32	2	52	R	(R)
33	3	53	S	(S)
34	4	54	T	(T)
35	5	55	U	(U)
36	6	56	V	(V)
37	7	57	W	(W)
38	8	58	X	(X)
39	9	59	Y	(Y)
3A	:	5A	Z	(Z)
3B	;	5B	◀	(◀)
3C	<	5C		()
3D	=	5D	▶	(▶)
3E	>	5E	—	(—)
3F	?	5F	—	(—)

- 70 begin blink
- 71 end point plot
- 72 end blink
- 73 begin point plot
- 74 end refresh

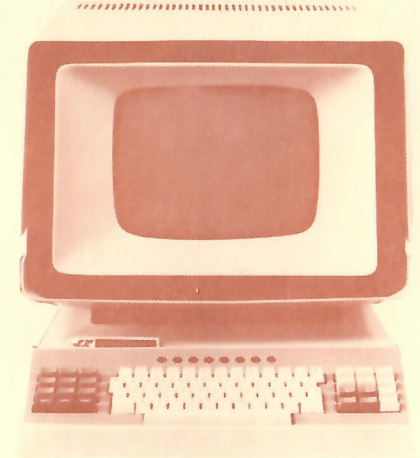
point-plot character



— INSTRUCTIONS —

LD	00ww	JMP	B8ww
ST	08ww	WJMP	8C00yyyy
AD	10ww	JSR	78ww
SB	18ww		
CM	20ww	CJFAL	A0xyyyyy
AN	28ww	CJLT	A1xyyyyy
OR	30ww	CJEQ	A2xyyyyy
		CJLE	A3xyyyyy
LDC	40ww	CJTRU	A4xyyyyy
STC	48ww	CJGE	A5xyyyyy
CMC	70ww	CJNE	A6xyyyyy
		CJGT	A7xyyyyy
INC	50ww	JCFAL	8800yyyy
DEC	58ww	SKP	8800
IN2	60ww	JCLT	8900yyyy
		JCEQ	8A00yyyy
LDI	80xx	JCLE	8B00yyyy
CLA	8000	JCTRU	8C00yyyy
ADI	90xx	JCGE	8D00yyyy
SBI	98xx	JCNE	8E00yyyy
ANI	A8xx	JCGT	8F00yyyy
ORI	B0xx	JCNG	8801yyyy
XOR	D0xx	JCPO	8C01yyyy
		JCEV	8C02yyyy
NOP	C000	JCOD	8802yyyy
HALT	C001	JCNC	8900yyyy
MLA	C002	JCCO	8D00yyyy
MAL	C003		
MCA	C004		
MAC	C005		
ENB	C006	CIO	C9zu
DSB	C007	RIO	CAzu
IOR	C008	WIO	CBzu
SHL4	C009		
CLL	C00C		
CLC	C00D	JTACK	C8zuyyyy
WAIT	C00F	JFACK	CCzuyyyy

ww = 9-bit address
 xx = immediate data
 yyyy = 16-bit addr.
 z = I/O function code
 u = I/O device no.

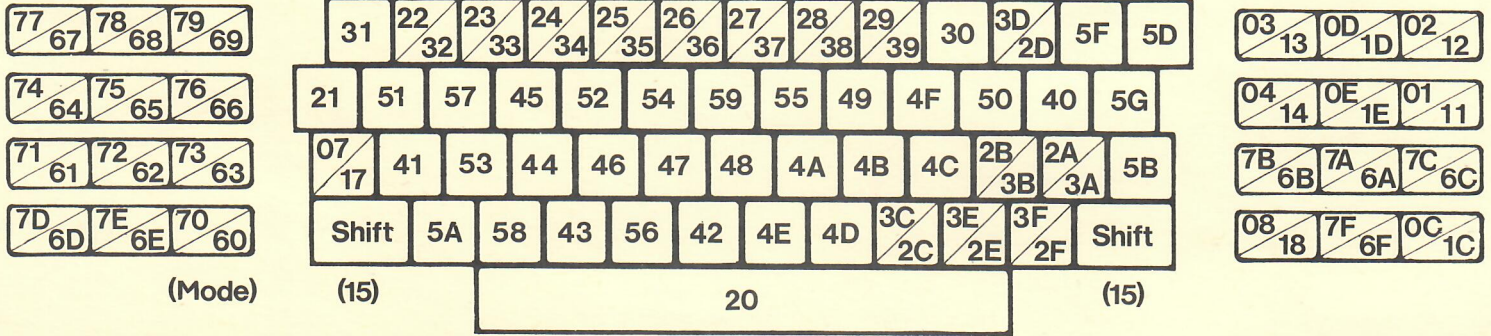
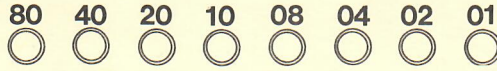


™ SPD 10/20 PROGRAMMERS' REFERENCE CARD

NAME: _____



KEYBOARD CODES



INTERRUPT ADDRESSES	INSTRUCTION CODES	ASSEMBLER PSEUDO/OPS/OPERATORS																																																																																																																												
FFE-FFF Cursor FFC-FFD Power Restart Address FF8-FFB Background FF4-FF7 Real-Time Clock FF0-FF3 Device 0 FEC-FEF Device 1 (paper-tape) FE8-FEB Device 2 (Keyboard) FE4-FE7 Device 3 FE0-FE3 Device 4 FDC-FDF Device 5 FD8-FDB Device 6 FD4-FD7 Device 7	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">00</td><td style="width: 15%;">LD</td><td style="width: 15%;">80</td><td style="width: 15%;">LDI</td></tr> <tr> <td>08</td><td>ST</td><td>88</td><td>JCxx</td></tr> <tr> <td>10</td><td>AD</td><td>90</td><td>ADI</td></tr> <tr> <td>18</td><td>SB</td><td>98</td><td>SBI</td></tr> <tr> <td>20</td><td>CM</td><td>A0</td><td>CJxx</td></tr> <tr> <td>28</td><td>AN</td><td>A8</td><td>ANI</td></tr> <tr> <td>30</td><td>OR</td><td>B0</td><td>ORI</td></tr> <tr> <td>38</td><td>---</td><td>B8</td><td>JMP</td></tr> <tr> <td>40</td><td>LDC</td><td>C0</td><td>generics</td></tr> <tr> <td>48</td><td>STC</td><td>C8</td><td>I/O</td></tr> <tr> <td>50</td><td>INC</td><td>D0</td><td>XOR</td></tr> <tr> <td>58</td><td>DEC</td><td>D8</td><td>---</td></tr> <tr> <td>60</td><td>IN2</td><td>E0</td><td>---</td></tr> <tr> <td>68</td><td>---</td><td>E8</td><td>---</td></tr> <tr> <td>70</td><td>CMC</td><td>F0</td><td>---</td></tr> <tr> <td>78</td><td>JSR</td><td>F8</td><td>---</td></tr> </table>	00	LD	80	LDI	08	ST	88	JCxx	10	AD	90	ADI	18	SB	98	SBI	20	CM	A0	CJxx	28	AN	A8	ANI	30	OR	B0	ORI	38	---	B8	JMP	40	LDC	C0	generics	48	STC	C8	I/O	50	INC	D0	XOR	58	DEC	D8	---	60	IN2	E0	---	68	---	E8	---	70	CMC	F0	---	78	JSR	F8	---	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">*</td><td style="width: 15%;">SIZE</td><td style="width: 15%;">yyyy,yyyy</td></tr> <tr> <td>/</td><td>ORG</td><td>yyyy</td></tr> <tr> <td>+</td><td>EQU</td><td>yyyy</td></tr> <tr> <td>-</td><td>SET</td><td>yyyy</td></tr> <tr> <td>.RS.</td><td>END</td><td></td></tr> <tr> <td>.LS.</td><td>WORD</td><td>nnn,nnn,...</td></tr> <tr> <td>.NE.</td><td>BYTE</td><td>xx,xx,...</td></tr> <tr> <td>.GT.</td><td>TEXT</td><td>'ABCDE...'</td></tr> <tr> <td>.LT.</td><td>DAC</td><td>yyyy</td></tr> <tr> <td>.GE.</td><td>BSZ</td><td>nnn</td></tr> <tr> <td>.EQ.</td><td>BSS</td><td>nnn</td></tr> <tr> <td>.LE.</td><td>ALGN</td><td></td></tr> <tr> <td>.AND.</td><td>PAGE</td><td>nnn</td></tr> <tr> <td>.OR.</td><td>EJECT</td><td></td></tr> <tr> <td>.XOR.</td><td>LIST</td><td></td></tr> <tr> <td></td><td>NLST</td><td></td></tr> <tr> <td></td><td>IF</td><td>nnn</td></tr> <tr> <td></td><td>ENDF</td><td></td></tr> <tr> <td></td><td>LIF</td><td></td></tr> <tr> <td></td><td>NLIF</td><td></td></tr> </table>	*	SIZE	yyyy,yyyy	/	ORG	yyyy	+	EQU	yyyy	-	SET	yyyy	.RS.	END		.LS.	WORD	nnn,nnn,...	.NE.	BYTE	xx,xx,...	.GT.	TEXT	'ABCDE...'	.LT.	DAC	yyyy	.GE.	BSZ	nnn	.EQ.	BSS	nnn	.LE.	ALGN		.AND.	PAGE	nnn	.OR.	EJECT		.XOR.	LIST			NLST			IF	nnn		ENDF			LIF			NLIF	
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I/O FUNCTION CODES

Refresh Controller	Communications Controller	Keyboard Controller																																																
Cursor On CIO 0,8 Set Line CIO 1,8 Refresh On CIO 2,8 Refresh Off CIO 4,8 Cursor Off CIO 8,8	<table style="width: 100%; border-collapse: collapse;"> <tr> <td></td><td style="text-align: center;">sync</td><td style="text-align: center;">async</td></tr> <tr> <td>Read Data</td><td>RIO 0,n</td><td>RIO 1,n</td></tr> <tr> <td>Write Data</td><td>WIO 0,n</td><td>WIO 1,n</td></tr> <tr> <td>Reset</td><td>CIO 2,n</td><td>CIO 1,n</td></tr> <tr> <td>Unmask</td><td>CIO 8,n</td><td>CIO 8,n</td></tr> <tr> <td>Mask</td><td>CIO 4,n</td><td>CIO C,n</td></tr> <tr> <td>Set Read Mode</td><td>CIO 6,n</td><td>CIO 3,n</td></tr> <tr> <td>Set Write Mode</td><td>CIO A,n</td><td>CIO 2,n</td></tr> <tr> <td>Set Data Flag</td><td>CIO 1,n</td><td>CIO 4,n</td></tr> <tr> <td>Device Present</td><td>TIO 0,n</td><td>TIO 0,n</td></tr> <tr> <td>Data Set On</td><td>TIO 8,n</td><td>TIO 1,n</td></tr> <tr> <td>No Cancel</td><td>TIO 2,n</td><td>TIO 8,n</td></tr> <tr> <td>No Overrun</td><td>TIO 4,n</td><td>TIO 4,n</td></tr> <tr> <td>No Data Set Error</td><td>TIO 2,n</td><td>TIO 2,n</td></tr> <tr> <td>No EOT</td><td>TIO 8,n</td><td>TIO 1,n</td></tr> <tr> <td>No Line-Break</td><td>TIO</td><td>8,n</td></tr> </table>		sync	async	Read Data	RIO 0,n	RIO 1,n	Write Data	WIO 0,n	WIO 1,n	Reset	CIO 2,n	CIO 1,n	Unmask	CIO 8,n	CIO 8,n	Mask	CIO 4,n	CIO C,n	Set Read Mode	CIO 6,n	CIO 3,n	Set Write Mode	CIO A,n	CIO 2,n	Set Data Flag	CIO 1,n	CIO 4,n	Device Present	TIO 0,n	TIO 0,n	Data Set On	TIO 8,n	TIO 1,n	No Cancel	TIO 2,n	TIO 8,n	No Overrun	TIO 4,n	TIO 4,n	No Data Set Error	TIO 2,n	TIO 2,n	No EOT	TIO 8,n	TIO 1,n	No Line-Break	TIO	8,n	Read Character RIO 0,2 Sound Alarm WIO 4,2 Interrupt If Strobe On WIO 1,2 Unmask CIO 8,2 Mask CIO 4,2 Set Lights CIO 2,2 Enable Repeat CIO 1,2 Device Present TIO 0,2
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Remote Load Controller Read Addr. 1 RIO 2,n Read Addr. 2 RIO 4,n Request Boot CIO 0,n Contr. On TIO 0,n																																																		