

PDP-8

INSTRUCTION LIST

Mnemonic Code	Operation	Cycles
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BASIC INSTRUCTIONS

AND	0000	logical AND	2
TAD	1000	2's complement add	2
ISZ	2000	increment and skip if zero	2
DCA	3000	deposit and clear AC	2
JMS	4000	jump to subroutine	2
JMP	5000	jump	1
IOT	6000	in/out transfer	2½
OPR	7000	operate	1

GROUP 1 OPERATE MICROINSTRUCTIONS (1 CYCLE)

			Event Time
NOP	7000	no operation	1
CLA	7200	clear AC	1
CLL	7100	clear link	1
CMA	7040	complement AC	1
CML	7020	complement link	1
RAR	7010	rotate AC and link right one	2
RAL	7004	rotate AC and link left one	2
RTR	7012	rotate AC and link right two	2
RTL	7006	rotate AC and link left two	2
IAC	7001	increment AC	2

GROUP 2 OPERATE MICROINSTRUCTIONS (1 CYCLE)

			Event Time
SMA	7500	skip on minus AC	1
SZA	7440	skip on zero AC	1
SPA	7510	skip on plus AC	1
SNA	7450	skip on non zero AC	1
SNL	7420	skip on non-zero link	1
SZL	7430	skip on zero link	1
SKP	7410	skip unconditionally	1
OSR	7404	inclusive OR, switch register with AC	2
HLT	7402	halts the program	1
CLA	7600	clear AC	1

COMBINED OPERATE MICROINSTRUCTIONS

CIA	7041	complement and increment AC	1
LAS	7604	load AC with switch register	1
STL	7120	set link (to 1)	1
GLK	7204	get link (put link in AC bit 11)	1
CLA CLL	7300	clear AC and link	1
CLA IAC	7201	set AC=1	1
CLA CMA	7240	set AC=-1	1
CLL RAR	7110	shift positive number one right	1
CLL RAL	7104	shift positive number one left	1
CLL RTL	7106	clear link, rotate 2 left	1
CLL RTR	7112	clear link, rotate 2 right	1
SZA CLA	7640	skip if AC=0, then clear AC	1
SZA SNL	7460	skip if AC=0 or link is 1, or both	1
SNA CLA	7650	skip if AC≠0, then clear AC	1
SMA CLA	7700	skip if AC<0, then clear AC	1
SMA SZA	7540	skip if AC≤0	1
SMA SNL	7520	skip if AC≤0 or link is 1, or both	1
SPA SNA	7550	skip if AC>0	1
SPA SZL	7530	skip if AC≥0, and if the link is 0	1
SPA CLA	7710	skip if AC≥0, then clear AC	1
SNA SZL	7470	skip if AC≠0 and link=0	1

Mnemonic Code	Operation	Time (μsec.)
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EAE MICROINSTRUCTIONS TYPE 182

DVI	7407	divide	< 35
NMI	7411	normalize	3.0 + 0.5n
SHL	7413	shift left	3.0 + 0.5n
ASR	7415	arithmetic shift right	3.0 + 0.5n
LSR	7417	logical shift right	3.0 + 0.5n
MQL	7421	load AC into MQ, clear AC	1.5
MUY	7405	multiply	9-21
MQA	7501	inclusive OR, MQ with AC	1.5
CAM	7621	clear AC and MQ	1.5
SCA	7441	read SC into AC	1.5
MQA	7501	read MQ into AC	1.5

Mnemonic Code	Operation	Cycles
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IOT MICROINSTRUCTIONS

PROGRAM INTERRUPT

ION	6001	turn interrupt on	1
IOF	6002	turn interrupt off	1

ANALOG TO DIGITAL CONVERTER TYPE 189

ADC	6004	convert A to D
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TELETYPE KEYBOARD/READER

KSF	6031	skip if keyboard/reader flag=1	2½
KCC	6032	clear AC and keyboard/reader flag	2½
KRS	6034	read keyboard/reader buffer, static	2½
KRB	6036	Clear AC, read keyboard buffer clear keyboard flag	2½

Mnemonic Code		Operation	Cycles
TELETYPE TELEPRINTER/PUNCH			
TSF	6041	skip if teleprinter/punch flag = 1	2½
TCF	6042	clear teleprinter/punch flag	2½
TPC	6044	load teleprinter/punch buffer, select and print	2½
TLS	6046	load teleprinter/punch buffer, select and print, and clear teleprinter/punch flag	2½

HIGH SPEED PERFORATED TAPE READER TYPE PC02

RSF	6011	skip if reader flag = 1	2½
RRB	6012	read reader buffer, and clear flag	2½
RFC	6014	clear flag and buffer and fetch character	2½

HIGH SPEED PERFORATED TAPE PUNCH TYPE PC03

PSF	6021	skip if punch flag = 1	2½
PCF	6022	clear flag and buffer	2½
PPC	6024	load buffer and punch character	2½
PLS	6026	clear flag and buffer; load and punch	2½

OSCILLOSCOPE DISPLAY TYPE 34B

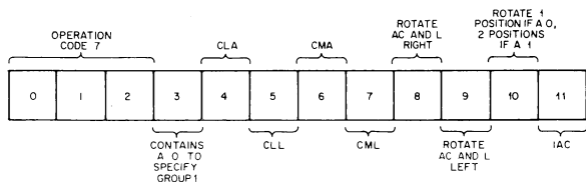
DXL	6053	clear and load x buffer	2½
DYL	6063	clear and load y buffer	2½
DXS	6057	combined dxl and dix	2½
DYS	6067	combined dyl and diy	2½
DIY	6064	intensify point	2½
DIX	6054	intensify point	2½
DCY	6061	clear y buffer	2½
DCX	6051	clear x buffer	2½

DECTAPE AND CONTROL TYPE TU55/TC01

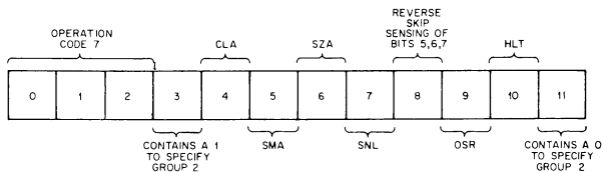
Mnemonic Code		Operation	Event Time
DTRA	6761	read status register A	1
DTCA	6762	clear status register A	2
DTXA	6764	load status register A	3
DTSF	6771	skip on flags	1
DTRB	6772	read status register B	2
DTLB	6774	load status register B	3

EXTENDED MEMORY TYPE 183

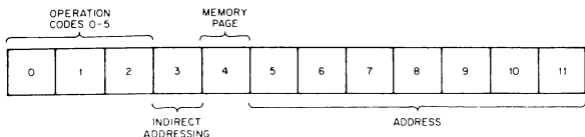
CDF	62n1	change to data field n	1
CIF	62n2	change to instruction field n	1
RDF	6214	read data field into AC 6-8	1
RIF	6224	read instruction field into AC 6-8	1
RMF	6244	restore memory field	1
RIB	6234	read interrupt buffer	1



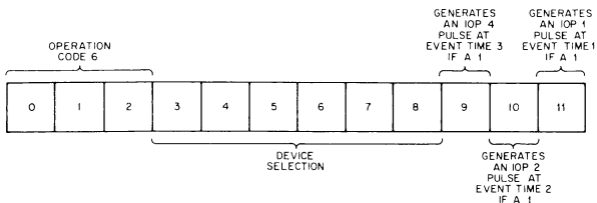
Group 1 Operate Instruction Bit Assignments



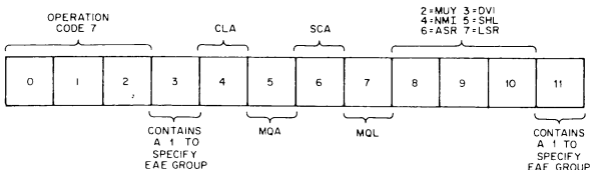
Group 2 Operate Instruction Bit Assignments



Memory Reference Instruction Bit Assignments



IOT Instruction Bit Assignments



EAE Microinstruction Bit Assignments

ASCII CODE

<u>Character</u>	<u>Code</u>	<u>Character</u>	<u>Code</u>
A	301	!	241
B	302	"	242
C	303	#	243
D	304	\$	244
E	305	%	245
F	306	&	246
G	307	'	247
H	310	(250
I	311)	251
J	312	*	252
K	313	+	253
L	314	,	254
M	315	-	255
N	316	.	256
O	317	/	257
P	320	:	272
Q	321	;	273
R	322	<	274
S	323	=	275
T	324	>	276
U	325	?	277
V	326	@	300
W	327	[333
X	330	\	334
Y	331]	335
Z	332	↑	336
0	260	←	337
1	261	EOT	204
2	262	W RU	205
3	263	RU	206
4	264	BELL	207
5	265	Line Feed	212
6	266	Return	215
7	267	Space	240
8	270	ALT MODE	375
9	271	Rub Out	377

digital

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CORPORATION**

MAYNARD, MASSACHUSETTS