

Olson

Notes:

- 1. Circled CPU cycle times are average times
- 2. F = Indirectly Addressable Instruction
- 3. T = Indexable Instruction
- 4. V = Variable
- 5. n = A number from 1 to 6
- 6. c = 1 to 10 or A to H
- 7. u = Unit Address

IBM 7640 HYPERTAPE CONTROL ORDERS

Alpha Code	Num Code	Binary Positions								Orders		
		2	3	4	5	8	9	10	11			
HNOP	00	1	0	1	0	1	0	1	0	1	0	HYPERTAPE NO OPERATION
HEOS	01	1	0	1	0	0	0	0	0	0	1	HYPERTAPE END OF SEQUENCE
HRLF	02	1	0	1	0	0	0	0	1	0	0	HYPERTAPE RESERVED LIGHT OFF
HRLN	03	1	0	1	0	0	0	0	1	1	0	HYPERTAPE RESERVED LIGHT ON
HCLN	05	1	0	1	0	0	1	0	0	1	0	HYPERTAPE CHECK LIGHT ON
HSEL	06	1	0	1	0	0	1	1	0	0	0	HYPERTAPE SELECT
HSBR	07	1	0	1	0	0	1	1	1	1	0	HYPERTAPE SELECT FOR BACKWARD READING
HCCR	28	0	0	1	0	1	0	0	0	0	0	HYPERTAPE CHANGE CARTRIDGE AND REWIND
HRWD	30	0	0	1	1	1	0	0	1	0	0	HYPERTAPE REWIND
HRUN	31	0	0	1	1	0	0	0	0	1	0	HYPERTAPE REWIND AND UNLOAD CARTRIDGE
HERG	32	0	0	1	1	0	0	0	1	0	0	HYPERTAPE ERASE LONG GAP
HWTM	33	0	0	1	1	0	0	0	1	1	0	HYPERTAPE WRITE TAPE MARK
HBSR	34	0	0	1	1	0	1	0	0	0	0	HYPERTAPE BACKSPACE
HBSF	35	0	0	1	1	0	1	0	0	1	0	HYPERTAPE BACKSPACE FILE
HSKR	36	0	0	1	1	0	1	1	0	0	0	HYPERTAPE SPACE
HSKF	37	0	0	1	1	0	1	1	1	1	0	HYPERTAPE SPACE FILE
HCHC	38	0	0	1	1	1	0	0	0	0	0	HYPERTAPE CHANGE CARTRIDGE
HUNL	39	0	0	1	1	1	0	0	0	1	0	HYPERTAPE UNLOAD CARTRIDGE
HFPN	42	0	1	0	0	0	0	0	1	0	0	HYPERTAPE FILE PROTECT ON

IBM 7631 FILE CONTROL ORDERS

Alpha Code	Num Code	Binary Positions								Orders		
		2	3	4	5	8	9	10	11			
DNOP	00	1	0	1	0	1	0	1	0	1	0	DISK NO OPERATION
DREL	04	1	0	1	0	0	1	0	0	0	0	DISK RELEASE
DEBM	08	1	0	1	0	1	0	0	0	0	0	DISK EIGHT BIT MODE
DSBM	09	1	0	1	0	1	0	0	0	1	0	DISK SIX BIT MODE
DSEK	80	1	0	0	0	1	0	1	0	0	0	DISK SEEK
DVSR	82	1	0	0	0	0	0	0	1	0	0	DISK PREPARE TO VERIFY -- SINGLE RECORD
DWRF	83	1	0	0	0	0	0	0	1	1	0	DISK PREPARE TO WRITE FORMAT
DVTN	84	1	0	0	0	0	1	0	0	0	0	DISK PREPARE TO VERIFY -- TRACK WITH NO ADDRESSES
DVCY	85	1	0	0	0	0	1	0	0	1	0	DISK PREPARE TO VERIFY -- CYLINDER OPERATION
DWRC	86	1	0	0	0	0	1	1	0	0	0	DISK PREPARE TO WRITE CHECK
DSAI	87	1	0	0	0	0	1	1	1	1	0	DISK SET ACCESS INOPERATIVE
DVTA	88	1	0	0	0	1	0	0	0	0	0	DISK PREPARE TO VERIFY -- TRACK WITH ADDRESSES
DVHA	89	1	0	0	0	1	0	0	1	0	0	DISK PREPARE TO VERIFY -- HOME ADDRESS

IBM 7607/7909 DATA CHANNEL COMMANDS

Alpha Codes	F	Binary Codes Positions					Commands
		S	1	2	3	19	
IOCD	X	0	0	0	0	0	I-O UNDER COUNT CONTROL AND DISCONNECT
IOCDn	X	0	0	0	0	1	IOCD NO TRANSMISSION
TCH	X	0	0	0	1	0	TRANSFER IN CHANNEL
IORP	X	0	1	0	0	0	I-O OF A RECORD AND PROCEED
IORPn	X	0	1	0	0	1	IORP NO TRANSMISSION
IORT	X	0	1	1	0	0	I-O OF A RECORD AND TRANSFER
IORTn	X	0	1	1	0	1	IORT NO TRANSMISSION
IOCP	X	1	0	0	0	0	I-O UNDER COUNT CONTROL AND PROCEED
IOCPn	X	1	0	0	0	1	IOCP NO TRANSMISSION
IOCT	X	1	0	1	0	0	I-O UNDER COUNT CONTROL AND TRANSFER
IOCTn	X	1	0	1	0	1	IOCT NO TRANSMISSION
IOSP	X	1	1	0	0	0	I-O UNTIL SIGNAL THEN PROCEED
IOSPn	X	1	1	0	0	1	IOSP NO TRANSMISSION
IOST	X	1	1	1	0	0	I-O UNTIL SIGNAL THEN TRANSFER
IOSTn	X	1	1	1	0	1	IOST NO TRANSMISSION

IBM 7909 DATA CHANNEL COMMANDS

Alpha Codes	F	Binary Codes Positions					Commands
		S	1	2	3	19	
WTR	X	0	0	0	0	0	WAIT AND TRANSFER
XMT	X	0	0	0	0	1	TRANSMIT
TCH	X	0	0	0	1	0	TRANSFER IN CHANNEL
LIPT	X	0	0	0	1	1	LEAVE INTERRUPT PROGRAM AND TRANSFER
CPYP	X	1	0	0	0	0	COPY AND PROCEED
CPYD	X	1	0	0	1	0	COPY AND DISCONNECT
TCM	X	1	0	1	0	1	TRANSFER ON CONDITION MET
ICC		1	1	1	0	1	INSERT CONTROL COUNTER
CTL	X	0	1	0	0	0	CONTROL
CTLR	X	0	1	0	0	1	CONTROL AND READ
CTLW	X	0	1	0	1	0	CONTROL AND WRITE
SNS		0	1	0	1	1	SENSE
LAR	X	0	1	1	0	0	LOAD ASSEMBLY REGISTER
SAR	X	0	1	1	0	1	STORE ASSEMBLY REGISTER
TWT	X	0	1	1	1	0	TRAP AND WAIT
LIP		1	1	0	0	1	LEAVE INTERRUPT PROGRAM
TDC	X	1	1	0	1	0	TRANSFER AND DECREMENT COUNTER
LCC	X	1	1	0	1	1	LOAD CONTROL COUNTER
SMS	X	1	1	1	0	0	SET MODE AND SELECT

INPUT-OUTPUT DEVICE ADDRESSES

Channel	Magnetic Tape Units	
	Octal Addresses	
	BCD Mode	Binary Mode
A	01201 TO 01212	01221 TO 01232
B	02201 TO 02212	02221 TO 02232
C	03201 TO 03212	03221 TO 03232
D	04201 TO 04212	04221 TO 04232
E	05201 TO 05212	05221 TO 05232
F	06201 TO 06212	06221 TO 06232
G	07201 TO 07212	07221 TO 07232
H	10201 TO 10212	10221 TO 10232

Card Readers		Card Punches	
Channel	Octal Addresses	Channel	Octal Addresses
A	01321	A	01341
B	02321	B	02341
C	03321	C	03341
D	04321	D	04341
E	05321	E	05341
F	06321	F	06341
G	07321	G	07341
H	10321	H	10341

Channel	Printers	
	Octal Addresses	
	Decimal Output	Binary Output
A	01361	01362
B	02361	02362
C	03361	03362
D	04361	04362
E	05361	05362
F	06361	06362
G	07361	07362
H	10361	10362

INSTRUCTION LISTING - ALPHABETIC

Operation Code					Operation Code				
Alpha	Octal	F	T	CPU Cy	Alpha	Octal	F	T	CPU Cy
ACL	0361	X	X	2	LBT	0760,00001		X	2
ADD	0400	X	X	2	LCHA	0544	X	X	V
ADM	0401	X	X	2	LCHB	-0544	X	X	V
ALS	0767		X	②	LCHC	0545	X	X	V
ANA	-0320	X	X	3	LCHD	-0545	X	X	V
ANS	0320	X	X	4	LCHE	0546	X	X	V
ARS	0771		X	②	LCHF	-0546	X	X	V
AXC	-0774			1	LCHG	0547	X	X	V
AXT	0774			1	LCHH	-0547	X	X	V
BSFc	-0764, cc 2uu		X	2	LDC	-0535			2
BSRc	0764, cc 2uu		X	2	LDI	0441	X	X	2
BTTc	0760, cc 000		X	2	LDQ	0560	X	X	2
CAL	-0500	X	X	2	LFT	-0054			3
CAQ	-0114			⑧	LFTM	-0760,00004		X	2
CAS	0340	X	X	2	LGL	-0763		X	②
CHS	0760,00002		X	2	LGR	-0765		X	②
CLA	0500	X	X	2	LLS	0763		X	②
CLM	0760,00000		X	2	LMTM	0760,00016		X	2
CLS	0502	X	X	2	LNT	-0056			3
COM	0760,00006		X	2	LRS	0765		X	②
CRQ	-0154			⑧	LSNM	-0760,00010		X	2
CVR	0114			⑧	LTM	-0760,00007		X	2
DCT	0760,00012		X	2	LXA	0534			2
DFAD	0301	X	X	④	LXD	-0534			2
DFAM	0305	X	X	④	MPR	-0200	X	X	⑤
DFDH	-0240	X	X	①⑨	MPY	0200	X	X	⑤
DFDP	-0241	X	X	①⑨	MSE	-0760,		X	2
DFMP	0261	X	X	①①	NOP	0761			2
DFSB	0303	X	X	④	NZT	-0520		X	2
DFSM	0307	X	X	④	OAI	0043			1
DLD	0443	X	X	2	OFT	0444	X	X	4
DST	-0603	X	X	3	ONT	0446	X	X	4
DUAM	-0305	X	X	④	ORA	-0501	X	X	2
DUFAM	-0301	X	X	④	ORS	-0602	X	X	2
DUFM	-0261	X	X	①①	OSI	0442	X	X	2
DUFS	-0303	X	X	④	PAC	0737			1
DUSM	-0307	X	X	④	PAI	0044			1
DVH	0220	X	X	⑧	PAX	0734			1
DVP	0221	X	X	⑧	PBT	-0760,00001		X	2
ECTM	-0760,00006		X	2	PCA	0756			1
EFTM	-0760,00002		X	2	PCD	-0756			1
EMTM	-0760,00016		X	2	PDC	-0737			1
ENB	0564	X	X	2	PDX	-0734			1
ENK	0760,00004		X	2	PIA	-0046			1
ERA	0322	X	X	3	PSE	0760,		X	2
ESNT	-0021	X	X	1	PXA	0754			1
ESTM	-0760,00005		X	2	PXD	-0754			1
ETM	0760,00007		X	2	RCDc	0762, cc 321		X	2
ETTc	-0760, cc 000		X	2	RCHA	0540	X	X	3
FAD	0300	X	X	③	RCHB	-0540	X	X	3
FAM	0304	X	X	③	RCHC	0541	X	X	3
FDH	0240	X	X	⑨	RCHD	-0541	X	X	3
FDP	0241	X	X	⑨	RCHE	0542	X	X	3
FMP	0260	X	X	⑤	RCHF	-0542	X	X	3
FRN	0760,00011		X	2	RCHG	0543	X	X	3
FSB	0302	X	X	③	RCHH	-0543	X	X	3
FSM	0306	X	X	③	RCT	0760,00014		X	2
HPR	0420			2	RDCc	0760, cc 352		X	2
HTR	0000	X	X	2	RDS	0762,		X	2
IIA	0041			1	REWc	0772, cc uuu		X	2
IIL	-0051			1	RFT	0054			3
IIR	0051			1	RIA	-0042			1
IIS	0440	X	X	2	RICc	0760, cc 350		X	2
IOT	0760,00005		X	2	RIL	-0057			1
LAC	0535			2	RIR	0057			1
LAS	-0340	X	X	2	RIS	0445	X	X	2

INSTRUCTION LISTING - ALPHABETIC

Operation Code		CPU			Operation Code		CPU		
Alpha	Octal	F	T	Cy	Alpha	Octal	F	T	Cy
RND	0760,00010		X	2	TCNE	-0064	X	X	1
RNT	0056			3	TCNF	-0065	X	X	1
RPRc	0762, cc361		X	2	TCNG	-0066	X	X	1
RQL	-0773		X	②	TCNH	-0067	X	X	1
RSCA	0540	X	X	3	TCOA	0060	X	X	1
RSCB	-0540	X	X	3	TCOB	0061	X	X	1
RSCC	0541	X	X	3	TCOC	0062	X	X	1
RSCD	-0541	X	X	3	TCOD	0063	X	X	1
RSCE	0542	X	X	3	TCOE	0064	X	X	1
RSCF	-0542	X	X	3	TCOF	0065	X	X	1
RSCG	0543	X	X	3	TCOG	0066	X	X	1
RSCH	-0543	X	X	3	TCOH	0067	X	X	1
RTBc	0762, cc2uu		X	2	TEFA	0030	X	X	2
RTDc	0762, cc2uu		X	2	TEFB	-0030	X	X	2
RUNc	-0772, ccuuu		X	2	TEFC	0031	X	X	2
SBM	-0400	X	X	2	TEFD	-0031	X	X	2
SCA	0636			2	TEFE	0032	X	X	2
SCD	-0636			2	TEFF	-0032	X	X	2
SCHA	0640	X	X	2	TEFG	0033	X	X	2
SCHB	-0640	X	X	2	TEFH	-0033	X	X	2
SCHC	0641	X	X	2	TIF	0046	X	X	2
SCHD	-0641	X	X	2	TIO	0042	X	X	2
SCHE	0642	X	X	2	TIX	2000			1
SCHF	-0642	X	X	2	TLO	0040	X	X	2
SCHG	0643	X	X	2	TMI	-0120	X	X	1
SCHH	-0643	X	X	2	TNO	-0140	X	X	1
SDHc	0776, cc2uu			2	TNX	-2000			1
SDLc	0776, cc2uu			2	TNZ	-0100	X	X	1
SIL	-0055			1	TOV	0140	X	X	1
SIR	0055			1	TPL	0120	X	X	1
SLF	0760,00140		X	2	TQO	0161	X	X	1
SLNn	0760,0014n		X	2	TQP	0162	X	X	1
SLQ	-0620	X	X	2	TRA	0020	X	X	1
SLTc	-0760,0014n		X	2	TRCA	0022	X	X	2
SLW	0602	X	X	2	TRCB	-0022	X	X	2
SPRn	0760, cc3nn		X	2	TRCC	0024	X	X	2
SPTc	0760, cc360		X	2	TRCD	-0024	X	X	2
SPUn	0760, cc34n		X	2	TRCE	0026	X	X	2
SSM	-0760,00003		X	2	TRCF	-0026	X	X	2
SSP	0760,00003		X	2	TRCG	0027	X	X	2
STA	0621	X	X	2	TRCH	-0027	X	X	2
STCA	0544			V	TSX	0074			1
STCB	-0544			V	TTR	0021	X	X	1
STCC	0545			V	TXH	3000			1
STCD	-0545			V	TXI	1000			1
STCE	0546			V	TXL	-3000			1
STCF	-0546			V	TZE	0100	X	X	1
STCG	0547			V	UAM	-0304	X	X	③
STCH	-0547			V	UFA	-0300	X	X	③
STD	0622	X	X	2	UFM	-0260	X	X	⑤
STI	0604	X	X	2	UFS	-0302	X	X	③
STL	-0625	X	X	2	USM	-0306	X	X	③
STO	0601	X	X	2	VDH	0224		X	⑧
STP	0630	X	X	2	VDP	0225		X	⑧
STQ	-0600	X	X	2	VLM	0204		X	⑤
STR	-1000			2	WEFc	0770, cc22u		X	2
STT	0625	X	X	2	WPBc	0766, cc362		X	2
STZ	0600	X	X	2	WPDc	0766, cc361		X	2
SUB	0402	X	X	2	WPUc	0766, cc341		X	2
SWTn	0760,0016n		X	2	WRS	0766,		X	2
SXA	0634			2	WTBc	0766, cc2uu		X	2
SXD	-0634			2	WTDc	0766, cc2uu		X	2
TCNA	-0060	X	X	1	XCA	0131			1
TCNB	-0061	X	X	1	XCL	-0130			1
TCNC	-0062	X	X	1	XEC	0522	X	X	1
TCND	-0063	X	X	1	ZET	0520	X	X	2

INSTRUCTION LISTING - NUMERIC

Operation Code		Instruction
Octal	Alpha	
0000	HTR	HALT AND TRANSFER
0020	TRA	TRANSFER
0021	TTR	TRAP TRANSFER
-0021	ESNT	ENTER STORAGE NULLIFICATION AND TRANSFER
0022	TRCA	TRANSFER ON DATA CHANNEL A REDUNDANCY CHECK
-0022	TRCB	TRANSFER ON DATA CHANNEL B REDUNDANCY CHECK
0024	TRCC	TRANSFER ON DATA CHANNEL C REDUNDANCY CHECK
-0024	TRCD	TRANSFER ON DATA CHANNEL D REDUNDANCY CHECK
0026	TRCE	TRANSFER ON DATA CHANNEL E REDUNDANCY CHECK
-0026	TRCF	TRANSFER ON DATA CHANNEL F REDUNDANCY CHECK
0027	TRCG	TRANSFER ON DATA CHANNEL G REDUNDANCY CHECK
-0027	TRCH	TRANSFER ON DATA CHANNEL H REDUNDANCY CHECK
0030	TEFA	TRANSFER ON DATA CHANNEL A END OF FILE
-0030	TEFB	TRANSFER ON DATA CHANNEL B END OF FILE
0031	TEFC	TRANSFER ON DATA CHANNEL C END OF FILE
-0031	TEFD	TRANSFER ON DATA CHANNEL D END OF FILE
0032	TEFE	TRANSFER ON DATA CHANNEL E END OF FILE
-0032	TEFF	TRANSFER ON DATA CHANNEL F END OF FILE
0033	TEFG	TRANSFER ON DATA CHANNEL G END OF FILE
-0033	TEFH	TRANSFER ON DATA CHANNEL H END OF FILE
0040	TLQ	TRANSFER ON LOW MQ
0041	IIA	INVERT INDICATORS FROM AC
0042	TIO	TRANSFER INDICATORS ON
-0042	RIA	RESET INDICATORS FROM AC
0043	OAI	OR ACCUMULATOR TO INDICATORS
0044	PAI	PLACE ACCUMULATOR IN INDICATORS
0046	TIF	TRANSFER INDICATORS OFF
-0046	PIA	PLACE INDICATORS IN ACCUMULATOR
0051	IIR	INVERT INDICATORS ON RIGHT HALF
-0051	IIL	INVERT INDICATORS ON LEFT HALF
0054	RFT	RIGHT HALF INDICATORS OFF TEST
-0054	LFT	LEFT HALF INDICATORS OFF TEST
0055	SIR	SET INDICATOR OF RIGHT HALF
-0055	SIL	SET INDICATOR OF LEFT HALF
0056	RNT	RIGHT HALF INDICATORS ON TEST
-0056	LNT	LEFT HALF INDICATORS ON TEST
0057	RIR	RESET INDICATORS ON RIGHT HALF
-0057	RIL	RESET INDICATORS ON LEFT HALF
0060	TCOA	TRANSFER DATA CHANNEL A IN OPERATION
-0060	TCNA	TRANSFER DATA CHANNEL A NOT IN OPERATION
0061	TCOB	TRANSFER DATA CHANNEL B IN OPERATION
-0061	TCNB	TRANSFER DATA CHANNEL B NOT IN OPERATION
0062	TCOC	TRANSFER DATA CHANNEL C IN OPERATION
-0062	TCNC	TRANSFER DATA CHANNEL C NOT IN OPERATION
0063	TCOD	TRANSFER DATA CHANNEL D IN OPERATION
-0063	TCND	TRANSFER DATA CHANNEL D NOT IN OPERATION
0064	TCOE	TRANSFER DATA CHANNEL E IN OPERATION
-0064	TCNE	TRANSFER DATA CHANNEL E NOT IN OPERATION
0065	TCOF	TRANSFER DATA CHANNEL F IN OPERATION
-0065	TCNF	TRANSFER DATA CHANNEL F NOT IN OPERATION
0066	TCOG	TRANSFER DATA CHANNEL G IN OPERATION
-0066	TCNG	TRANSFER DATA CHANNEL G NOT IN OPERATION
0067	TCOH	TRANSFER DATA CHANNEL H IN OPERATION
-0067	TCNH	TRANSFER DATA CHANNEL H NOT IN OPERATION
0074	TSX	TRANSFER AND SET INDEX
0100	TZE	TRANSFER ON ZERO
-0100	TNZ	TRANSFER ON NO ZERO
0114	CVR	CONVERT BY REPLACEMENT FROM AC
-0114	CAQ	CONVERT BY ADDITION FROM MQ
0120	TPL	TRANSFER ON PLUS
-0120	TMI	TRANSFER ON MINUS
-0130	XCL	EXCHANGE LOGICAL ACCUMULATOR AND MQ
0131	XCA	EXCHANGE ACCUMULATOR AND MQ
0140	TOV	TRANSFER ON OVERFLOW
-0140	TNO	TRANSFER ON NO OVERFLOW
-0154	CRQ	CONVERT BY REPLACEMENT FROM MQ
0161	TQO	TRANSFER ON MQ OVERFLOW

INSTRUCTION LISTING - NUMERIC

Operation Code		Instruction
Octal Alpha		
0162	TQP	TRANSFER ON MQ PLUS
0200	MPY	MULTIPLY
-0200	MPR	MULTIPLY AND ROUND
0204	VLM	VARIABLE LENGTH MULTIPLY
0220	DVH	DIVIDE OR HALT
0221	DVP	DIVIDE OR PROCEED
0224	VDH	VARIABLE LENGTH DIVIDE OR HALT
0225	VDP	VARIABLE LENGTH DIVIDE OR PROCEED
0240	FDH	FLOATING DIVIDE OR HALT
-0240	DFDH	DOUBLE PRECISION FLOATING POINT DIVIDE OR HALT
0241	FDP	FLOATING DIVIDE OR PROCEED
-0241	DFDP	DOUBLE PRECISION FLOATING POINT DIVIDE OR PROCEED
0260	FMP	FLOATING MULTIPLY
-0260	UFM	UNNORMALIZED FLOATING MULTIPLY
0261	DFMP	DOUBLE PRECISION FLOATING POINT MULTIPLY
-0261	DUFM	DOUBLE PRECISION UNNORMALIZED FLOATING POINT MULTIPLY
0300	FAD	FLOATING ADD
-0300	UFA	UNNORMALIZED FLOATING ADD
0301	DFAD	DOUBLE PRECISION FLOATING POINT ADD
-0301	DUFA	DOUBLE PRECISION UNNORMALIZED FLOATING POINT ADD
0302	FSB	FLOATING SUBTRACT
-0302	UFS	UNNORMALIZED FLOATING SUBTRACT
0303	DFSB	DOUBLE PRECISION FLOATING POINT SUBTRACT
-0303	DUFS	DOUBLE PRECISION UNNORMALIZED FLOATING POINT SUBTRACT
0304	FAM	FLOATING ADD MAGNITUDE
-0304	UAM	UNNORMALIZED FLOATING ADD MAGNITUDE
0305	DFAM	DOUBLE PRECISION FLOATING POINT ADD MAGNITUDE
-0305	DUAM	DOUBLE PRECISION UNNORMALIZED FL PT ADD MAGNITUDE
0306	FSM	FLOATING SUBTRACT MAGNITUDE
-0306	USM	UNNORMALIZED FLOATING SUBTRACT MAGNITUDE
0307	DFSM	DOUBLE PRECISION FLOATING POINT SUBTRACT MAGNITUDE
-0307	DUSM	DOUBLE PRECISION UNNORMALIZED FL PT SUBTRACT MAGNITUDE
0320	ANS	AND TO STORAGE
-0320	ANA	AND TO ACCUMULATOR
0322	ERA	EXCLUSIVE OR TO ACCUMULATOR
0340	CAS	COMPARE ACCUMULATOR WITH STORAGE
-0340	LAS	LOGICAL COMPARE AC WITH STORAGE
0361	ACL	ADD AND CARRY LOGICAL WORD
0400	ADD	ADD
-0400	SBM	SUBTRACT MAGNITUDE
0401	ADM	ADD MAGNITUDE
0402	SUB	SUBTRACT
0420	HPR	HALT AND PROCEED
0440	IIS	INVERT INDICATORS FROM STORAGE
0441	LDI	LOAD INDICATORS
0442	OSI	OR STORAGE TO INDICATORS
0443	DLD	DOUBLE LOAD
0444	OFT	OFF TEST FOR INDICATORS
0445	RIS	RESET INDICATORS FROM STORAGE
0446	ONT	ON TEST FOR INDICATORS
0500	CLA	CLEAR AND ADD
-0500	CAL	CLEAR AND ADD LOGICAL WORD
-0501	ORA	OR TO ACCUMULATOR
0502	CLS	CLEAR AND SUBTRACT
0520	ZET	STORAGE ZERO TEST
-0520	NZT	STORAGE NON ZERO TEST
0522	XEC	EXECUTE
0534	LXA	LOAD INDEX FROM ADDRESS
-0534	LXD	LOAD INDEX FROM DECREMENT
0535	LAC	LOAD COMPLEMENT OF ADDRESS IN XR
-0535	LDC	LOAD COMPLEMENT OF DECREMENT IN XR
0540	RCHA	RESET AND LOAD CHANNEL A
-0540	RCHB	RESET AND LOAD CHANNEL B

INSTRUCTION LISTING - NUMERIC

Operation Code

Octal Alpha

Instruction

Octal	Alpha	Instruction
0541	RCHC	RESET AND LOAD CHANNEL C
-0541	RCHD	RESET AND LOAD CHANNEL D
0542	RCHE	RESET AND LOAD CHANNEL E
-0542	RCHF	RESET AND LOAD CHANNEL F
0543	RCHG	RESET AND LOAD CHANNEL G
-0543	RCHH	RESET AND LOAD CHANNEL H
0540	RSCA	RESET AND START CHANNEL A
-0540	RSCB	RESET AND START CHANNEL B
0541	RSCC	RESET AND START CHANNEL C
-0541	RSCD	RESET AND START CHANNEL D
0542	RSCE	RESET AND START CHANNEL E
-0542	RSCF	RESET AND START CHANNEL F
0543	RSCG	RESET AND START CHANNEL G
-0543	RSCH	RESET AND START CHANNEL H
0544	LCHA	LOAD CHANNEL A
-0544	LCHB	LOAD CHANNEL B
0545	LCHC	LOAD CHANNEL C
-0545	LCHD	LOAD CHANNEL D
0546	LCHE	LOAD CHANNEL E
-0546	LCHF	LOAD CHANNEL F
0547	LCHG	LOAD CHANNEL G
-0547	LCHH	LOAD CHANNEL H
0544	STCA	START CHANNEL A
-0544	STCB	START CHANNEL B
0545	STCC	START CHANNEL C
-0545	STCD	START CHANNEL D
0546	STCE	START CHANNEL E
-0546	STCF	START CHANNEL F
0547	STCG	START CHANNEL G
-0547	STCH	START CHANNEL H
0560	LDQ	LOAD MQ
0564	ENB	ENABLE
0600	STZ	STORE ZERO
-0600	STQ	STORE MQ
0601	STO	STORE
0602	SLW	STORE LOGICAL WORD
-0602	ORS	OR TO STORAGE
-0603	DST	DOUBLE STORE
0604	STI	STORE INDICATORS
-0620	SLQ	STORE LEFT HALF MQ
0621	STA	STORE ADDRESS
0622	STD	STORE DECREMENT
0625	STT	STORE TAG
-0625	STL	STORE INSTRUCTION LOCATION COUNTER
0630	STP	STORE PREFIX
0634	SXA	STORE INDEX IN ADDRESS
-0634	SXD	STORE INDEX IN DECREMENT
0636	SCA	STORE COMPLEMENT OF INDEX IN ADDRESS
-0636	SCD	STORE COMPLEMENT OF INDEX IN DECREMENT
0640	SCHA	STORE CHANNEL A
-0640	SCHB	STORE CHANNEL B
0641	SCHC	STORE CHANNEL C
-0641	SCHD	STORE CHANNEL D
0642	SCHE	STORE CHANNEL E
-0642	SCHF	STORE CHANNEL F
0643	SCHG	STORE CHANNEL G
-0643	SCHH	STORE CHANNEL H
0734	PAX	PLACE ADDRESS IN INDEX
-0734	PDX	PLACE DECREMENT IN INDEX
0737	PAC	PLACE COMPLEMENT OF ADDRESS IN XR
-0737	PDC	PLACE COMPLEMENT OF DECREMENT IN XR
0754	PXA	PLACE INDEX IN ADDRESS
-0754	PXD	PLACE INDEX IN DECREMENT
0756	PCA	PLACE COMPLEMENT OF INDEX IN ADDRESS
-0756	PCD	PLACE COMPLEMENT OF INDEX IN DECREMENT

INSTRUCTION LISTING - NUMERIC

Operation Code Octal	Alpha	Instruction
0760,00000	CLM	CLEAR MAGNITUDE
0760,00001	LBT	LOW ORDER BIT TEST
0760,00002	CHS	CHANGE SIGN
0760,00003	SSP	SET SIGN PLUS
0760,00004	ENK	ENTER KEYS
0760,00005	IOT	INPUT OUTPUT CHECK TEST
0760,00006	COM	COMPLEMENT MAGNITUDE
0760,00007	ETM	ENTER TRAPPING MODE
0760,00010	RND	ROUND
0760,00011	FRN	FLOATING ROUND
0760,00012	DCT	DIVIDE CHECK TEST
0760,00014	RCT	RESTORE CHANNEL TRAPS
0760,00016	LMTM	LEAVE MULTIPLE TAG MODE
0760,00140	SLF	SENSE LIGHTS OFF
0760,	PSE	PLUS SENSE
0760,cc000	BTTc	BEGINNING OF TAPE TEST
0760,0014n	SLNn	SENSE LIGHTS ON
0760,0016n	SWTn	SENSE SWITCH TEST
0760,cc34n	SPUn	SENSE PUNCH
0760,cc350	RICc	RESET CHANNEL
0760,cc352	RDCc	RESET DATA CHANNEL
0760,cc360	SPTc	SENSE PRINTER TEST
0760,cc3nn	SPRn	SENSE PRINTER
-0760,00001	PBT	P BIT TEST
-0760,00002	EFTM	ENTER FLOATING TRAP MODE
-0760,00003	SSM	SET SIGN MINUS
-0760,00004	LFTM	LEAVE FLOATING TRAP MODE
-0760,00005	ESTM	ENTER SELECT TRAP MODE
-0760,00006	ECTM	ENTER COPY TRAP MODE
-0760,00007	LTM	LEAVE TRAPPING MODE
-0760,00010	LSNM	LEAVE STORAGE NULLIFICATION MODE
-0760,00016	EMTM	ENTER MULTIPLE TAG MODE
-0760,	MSE	MINUS SENSE
-0760,cc000	ETTc	END OF TAPE TEST
-0760,0014n	SLTc	SENSE LIGHT TEST
0761	NOP	NO OPERATION
0762,	RDS	READ SELECT
0762,cc2uu	RTDc	READ TAPE DECIMAL
0762,cc2uu	RTBc	READ TAPE BINARY
0762,cc321	RCDc	READ CARD READER
0762,cc361	RPRc	READ PRINTER
0763	LLS	LONG LEFT SHIFT
-0763	LGL	LOGICAL LEFT SHIFT
0764,cc2uu	BSRc	BACKSPACE RECORD
-0764,cc2uu	BSFc	BACKSPACE FILE
0765	LRS	LONG RIGHT SHIFT
-0765	LGR	LOGICAL RIGHT SHIFT
0766,	WRS	WRITE SELECT
0766,cc2uu	WTDc	WRITE TAPE DECIMAL
0766,cc2uu	WTBc	WRITE TAPE BINARY
0766,cc341	WPUc	WRITE PUNCH
0766,cc361	WPDc	WRITE PRINTER DECIMAL
0766,cc362	WPBc	WRITE PRINTER BINARY
0767	ALS	ACCUMULATOR LEFT SHIFT
0770,cc22u	WEFc	WRITE END OF FILE
0771	ARS	ACCUMULATOR RIGHT SHIFT
0772,ccuuu	REWc	REWIND
-0772,ccuuu	RUNC	REWIND AND UNLOAD
-0773	RQL	ROTATE MQ LEFT
0774	AXT	ADDRESS TO INDEX TRUE
-0774	AXC	ADDRESS TO INDEX COMPLEMENTED
0776,cc2uu	SDHc	SET DENSITY HIGH
0776,cc2uu	SDLc	SET DENSITY LOW
1000	TXI	TRANSFER WITH INDEX INCREMENTED
-1000	STR	STORE LOCATION AND TRAP
2000	TIX	TRANSFER ON INDEX
-2000	TNX	TRANSFER ON NO INDEX
3000	TXH	TRANSFER ON INDEX HIGH
-3000	TXL	TRANSFER ON INDEX LOW OR EQUAL