

UNIVAC®

1108

CODE CARD

CHARACTER CODE

FIELDATA COMPUTER CODE (OCTAL)	80-COLUMN PUNCHED CARD CODE	CHARACTER	FIELDATA COMPUTER CODE (OCTAL)	80-COLUMN PUNCHED CARD CODE	CHARACTER
00	7-8	@	40	12-4-8)
01	12-5-8	[41	11	-
02	11-5-8]	42	12	+
03	12-7-8	x	43	12-6-8	<
04	11-7-8	Δ	44	3-8	=
05	(Blank)	(Space)	45	6-8	>
06	12-1	A	46	2-8	&
07	12-2	B	47	11-3-8	\$
10	12-3	C	50	11-4-8	*
11	12-4	D	51	0-4-8	(
12	12-5	E	52	0-5-8	%
13	12-6	F	53	5-8	:
14	12-7	G	54	12-0	?
15	12-8	H	55	11-0	!
16	12-9	I	56	0-3-8	, (comma)
17	11-1	J	57	0-6-8	\
20	11-2	K	60	0	0
21	11-3	L	61	1	1
22	11-4	M	62	2	2
23	11-5	N	63	3	3
24	11-6	O	64	4	4
25	11-7	P	65	5	5
26	11-8	Q	66	6	6
27	11-9	R	67	7	7
30	0-2	S	70	8	8
31	0-3	T	71	9	9
32	0-4	U	72	4-8	' (apostrophe)
33	0-5	V	73	11-6-8	:
34	0-6	W	74	0-1	/
35	0-7	X	75	12-3-8	.
36	0-8	Y	76	0-7-8	□
37	0-9	Z	77	0-2-8	+ (or stop)

ASSEMBLER OPERAND SUBFIELDS

TYPE 1 a, u, x, j

TYPE 4 u, x

TYPE 2 a, u, x

TYPE 5 a

TYPE 3 u, x, j

TYPE 6 NO SUBFIELDS

The j subfield, where allowed, may appear either as the second expression in the operation field or as an operand subfield; e.g.,

OP, j a, u, x or OP a, u, x, j

An asterisk preceding u indicates indirect addressing.

An asterisk preceding x indicates index register incrementation.

INSTRUCTION CODE f j	MNEMONIC	INSTRUCTIONS	DESCRIPTION
LOAD INSTRUCTIONS			
10	0-17	LA	LOAD A (U) - A
11	0-17	LN, LNA	LOAD NEGATIVE A -(U) - A
12	0-17	LM, LMA	LOAD MAGNITUDE A (U) - A
13	0-17	LNMA	LOAD NEGATIVE MAGNITUDE A - U - A
23	0-17	LR	LOAD R (U) - R ₀
26	0-17	LXM	LOAD X MODIFIER (U) - X ₀ ^{17,00}
27	0-17	LX	LOAD X (U) - X ₀
46	0-17	LXI	LOAD X INCREMENT (U) - X ₀ ^{35,18}
71	13	DL	DOUBLE LOAD A (U, U+1) - A, A+1
71	14	DLN	DOUBLE LOAD NEGATIVE A -(U, U+1) - A, A+1
71	15	DLM	DOUBLE LOAD MAGNITUDE A (U, U+1) - A, A+1

STORE INSTRUCTIONS			
01	0-15	SA	STORE A (A) - U
02	0-15	SN, SNA	STORE NEGATIVE A -(A) - U
03	0-15	SM, SMA	STORE MAGNITUDE A (A) - U
04	0-15	SR	STORE R (R ₀) - U
05	0-15	SZ	STORE ZERO Zeros - U
06	0-15	SX	STORE X (X ₀) - U
22	0-15	BT	BLOCK TRANSFER, REPEAT (X ₀ +U) - (X ₀ +U), REPEAT
71	12	DS	DOUBLE STORE A (A, A+1) - U, U+1

FIXED POINT ARITHMETIC INSTRUCTIONS			
14	0-17	AA	ADD TO A (A) + (U) - A
15	0-17	ANA	ADD NEGATIVE TO A (A) - (U) - A
16	0-17	AM, AMA	ADD MAGNITUDE TO A (A) + (U) - A
17	0-17	ANM, ANMA	ADD NEGATIVE MAGNITUDE TO A (A) - (U) - A
20	0-17	AU	ADD UPPER (A) + (U) - A + 1
21	0-17	ANU	ADD NEGATIVE UPPER (A) - (U) - A + 1
24	0-17	AX	ADD TO X (X ₀) + (U) - X ₀
25	0-17	ANX	ADD NEGATIVE TO X (X ₀) - (U) - X ₀
30	0-17	MI	MULTIPLY INTEGER (A) - (U) - A, A + 1
31	0-17	MSI	MULTIPLY SINGLE INTEGER (A) - (U) - A
32	0-17	MF	MULTIPLY FRACTIONAL (A, A + 1) - (U) - A, REMAINDER - A + 1
34	0-17	DI	DIVIDE INTEGER (A, A + 1) + (U) - A, REMAINDER - A + 1
35	0-17	DSF	DIVIDE SINGLE FRACTIONAL (A) + (U) - A + 1
36	0-17	DF	DIVIDE FRACTIONAL (A, A + 1) + (U) - A, REMAINDER - A + 1
71	10	DA	DOUBLE PRECISION FIXED POINT ADD (A, A + 1) + (U, U+1) - A, A + 1
71	11	DAN	DOUBLE PRECISION FIXED POINT ADD NEGATIVE (A, A + 1) - (U, U+1) - A, A + 1
72	04	AH	ADD HALVES (A) ^{17,00} + (U) ^{17,00} - A ^{17,00}
72	05	ANH	ADD NEGATIVE HALVES (A) ^{17,00} - (U) ^{17,00} - A ^{17,00}
72	06	AT	ADD THIRDS (A) ^{35,24} + (U) ^{35,24} - A ^{35,24}
72	07	ANT	ADD NEGATIVE THIRDS (A) ^{35,24} - (U) ^{35,24} - A ^{35,24}

FLOATING POINT INSTRUCTIONS			
76	00	FA	FLOATING ADD (A) + (U) - A, A + 1
76	01	FAN	FLOATING ADD NEGATIVE (A) - (U) - A, A + 1
76	02	FM	FLOATING MULTIPLY (A) - (U) - A, A + 1
76	03	FD	FLOATING DIVIDE (A) + (U) - A, REMAINDER - A + 1
76	04	LUF	LOAD AND UNPACK FLOATING UNPACK (U), STORE FIXED-POINT PART IN A + 1, AND STORE BIASED EXPONENT IN A _{07,00}
76	05	LCF	LOAD AND CONVERT TO FLOATING NORMALIZE (U), PACK WITH BIASED EXPONENT FROM (A), AND STORE AT A + 1
76	06	MCDU	MAGNITUDE OF CHARACTERISTIC DIFFERENCE TO UPPER A _{35,27} - (U) _{35,27} - A + 1 _{00,00}
76	07	CDU	CHARACTERISTIC DIFFERENCE TO UPPER (A) _{35,27} - (U) _{35,27} + A _{100,00}
76	10	DFA	DOUBLE PRECISION FLOATING ADD (A, A + 1) + (U, U+1) - A, A + 1
76	11	DFAN	DOUBLE PRECISION FLOATING ADD NEGATIVE (A, A + 1) - (U, U+1) - A, A + 1
76	12	DFM	DOUBLE PRECISION FLOATING MULTIPLY (A, A + 1) - (U, U+1) - A, A + 1
76	13	DFD	DOUBLE PRECISION FLOATING DIVIDE (A, A + 1) + (U, U+1) - A, A + 1
76	14	DFU	DOUBLE LOAD & UNPACK FLOATING UNPACK (U, U+1), FIXED-POINT PART - A + 1, A + 2; EXPONENT - A _{10,00}
76	15	DFP	DOUBLE LOAD & CONVERT TO FLOATING NORMALIZE AND PACK FROM FIXED-POINT PART IN (U, U+1), EXPONENT IN (A) _{10,00} AND STORE IN A + 1, A + 2
76	16	FEL	FLOATING EXPAND AND LOAD (U) _{01,08,27} - A, A + 1 _{01,11,60}
76	17	FCL	FLOATING COMPRESS AND LOAD (U, U+1) _{01,11,60} - A _{01,08,27}

REPEATED SEARCH INSTRUCTIONS			
62	0-17	SE	SEARCH FOR EQUAL SKIP IF (U) = (A), REPEAT
63	0-17	SNE	SEARCH FOR NOT EQUAL SKIP IF (U) ≠ (A), REPEAT
64	0-17	SLE	SEARCH FOR LESS OR EQUAL SEARCH FOR NOT GREATER SKIP IF (U) ≤ (A), REPEAT
65	0-17	SG	SEARCH FOR GREATER SKIP IF (U) > (A), REPEAT
66	0-17	SW	SEARCH FOR WITHIN RANGE SKIP IF (A) < (U) ≤ (A + 1), REPEAT
67	0-17	SNW	SEARCH FOR NOT WITHIN RANGE SKIP IF (U) ≤ (A) OR (U) > (A + 1), REPEAT
71	00	MSE	MASK SEARCH FOR EQUAL SKIP IF (U) AND (M) = (A) AND (M), REPEAT
71	01	MSNE	MASK SEARCH FOR NOT EQUAL SKIP IF (U) AND (M) ≠ (A) AND (M), REPEAT
71	02	MSLE	MASK SEARCH FOR LESS OR EQUAL SKIP IF (U) AND (M) ≤ (A) AND (M), REPEAT
71	03	MSG	MASK SEARCH FOR NOT GREATER SKIP IF (U) AND (M) > (A) AND (M), REPEAT
71	04	MSW	MASKED SEARCH FOR WITHIN RANGE SKIP IF (A) AND (M) < (U) AND (M) ≤ (A + 1) AND (M), REPEAT
71	05	MSNW	MASKED SEARCH FOR NOT WITHIN RANGE SKIP IF (U) AND (M) ≤ (A) AND (MOR (U) AND (M)) > (A + 1) AND (M), REPEAT
71	06	MASL	MASKED ALPHANUMERIC SEARCH FOR LESS OR EQUAL SKIP IF (U) AND (M) ≤ (A) AND (M), REPEAT
71	07	MASG	MASKED ALPHANUMERIC SEARCH FOR GREATER SKIP IF (U) AND (M) > (A) AND (M), REPEAT

TEST (OR SKIP) INSTRUCTIONS			
44	0-17	TEP	TEST EVEN PARITY SKIP IF (A) AND (U) IS EVEN PARITY
45	0-17	TOP	TEST ODD PARITY SKIP IF (A) AND (U) IS ODD PARITY
47	0-17	TLEM	TEST LESS OR EQUAL TO MODIFIER TEST NOT GREATER THAN MODIFIER SKIP IF (X ₀) ^{17,00} ≥ (U), ALWAYS (X ₀) ^{17,00} (X ₀) ^{35,18} + X ₀ ^{17,00}
50	0-17	TZ	TEST FOR ZERO SKIP IF (U) = 0
51	0-17	TNZ	TEST FOR NON ZERO SKIP IF (U) ≠ 0
52	0-17	TE	TEST FOR EQUAL SKIP IF (A) = (U)
53	0-17	TNE	TEST FOR NOT EQUAL SKIP IF (A) ≠ (U)
54	0-17	TLE	TEST FOR LESS OR EQUAL TEST FOR NOT GREATER SKIP IF (U) ≤ (A)
55	0-17	TG	TEST FOR GREATER SKIP IF (U) > (A)
56	0-17	TW	TEST FOR WITHIN RANGE SKIP IF (A) < (U) ≤ (A + 1)
57	0-17	TNW	TEST FOR NOT WITHIN RANGE SKIP IF (U) ≤ (A) OR (U) > (A + 1)
60	0-17	TP	TEST FOR POSITIVE SKIP IF (U) ₃₅ = 0
61	0-17	TN	TEST FOR NEGATIVE SKIP IF (U) ₃₅ = 1
71	17	DTE	DOUBLE PRECISION TEST EQUAL SKIP IF (U, U+1) = (A, A + 1)

SHIFT INSTRUCTIONS			
73	00	SSC	SINGLE SHIFT CIRCULAR SHIFT (A) RIGHT U PLACES CIRCULARLY
73	01	DSC	DOUBLE SHIFT CIRCULAR SHIFT (A, A + 1), RIGHT U PLACES CIRCULARLY
73	02	SSL	SINGLE SHIFT LOGICAL SHIFT (A) RIGHT U PLACES, ZERO FILL
73	03	DSL	DOUBLE SHIFT LOGICAL SHIFT (A, A + 1) RIGHT U PLACES, ZERO FILL
73	04	SSA	SINGLE SHIFT ALGEBRAIC SHIFT (A) RIGHT U PLACES, SIGN FILL
73	05	DSA	DOUBLE SHIFT ALGEBRAIC SHIFT (A, A + 1) RIGHT U PLACES, SIGN FILL
73	06	LSC	LOAD SHIFT AND COUNT (U) - A, SHIFT A LEFT CIRCULARLY UNTIL A ₃₅ ≠ A ₃₄ OR UNTIL A HAS BEEN SHIFTED 35 TIMES. STORE THE RESULT IN A AND THE NUMBER OF SHIFTS IN A + 1.
73	07	DLSC	DOUBLE LOAD SHIFT AND COUNT (U, U + 1) - A, A + 1; SHIFT (A, A + 1) LEFT CIRCULARLY UNTIL A ₇ ≠ A ₂₀ . STORE RESULT IN A, A + 1 AND THE NUMBER OF SHIFTS IN A + 2.
73	10	LSSC	LEFT SINGLE SHIFT CIRCULAR SHIFT (A) LEFT U PLACES, CIRCULARLY
73	11	LDSC	LEFT DOUBLE SHIFT CIRCULAR SHIFT (A, A + 1) LEFT U PLACES, CIRCULARLY
73	12	LSSL	LEFT SINGLE SHIFT LOGICAL SHIFT (A) LEFT U PLACES, ZERO FILL
73	13	LDLSC	LEFT DOUBLE SHIFT LOGICAL SHIFT (A, A + 1) LEFT U PLACES, ZERO FILL

UNCONDITIONAL JUMP INSTRUCTIONS			
72	01	SLJ	STORE LOCATION AND JUMP (P) - BASE ADDRESS MODIFIER [BI OR BD] - U _{12,00} ; JUMP TO U + 1
74	07	AAIJ	ALLOW ALL I/O INTERRUPTS AND JUMP ENABLE ALL I/O INTERRUPTS AND JUMP TO U
74	13	LMJ	LOAD MODIFIER AND JUMP (P) - BASE ADDRESS MODIFIER [BI OR BD] - X ₀ ^{17,00} ; JUMP TO U

CONDITIONAL JUMP INSTRUCTIONS

70	1	JGD	JUMP ON GREATER AND DECREMENT	JUMP TO U IF (ja) > 0, THEN (ja) - 1 - ja
71	16	DJZ	DOUBLE PRECISION ZERO JUMP	JUMP TO U IF (A,A-1) = ± 0
72	02	JPS	JUMP ON POSITIVE AND SHIFT	IF (A) _{35:0} = 0, JUMP TO U; ALWAYS SHIFT (A) LEFT CIRCULARLY ONE POSITION
72	03	JNS	JUMP ON NEGATIVE AND SHIFT	IF (A) ₃₅ = 1, JUMP TO U; ALWAYS SHIFT (A) LEFT CIRCULARLY ONE POSITION
74	00	JZ	JUMP ON ZERO	IF (A) = ± 0, JUMP TO U
74	01	JKZ	JUMP ON NON ZERO	IF (A) ≠ ± 0, JUMP TO U
74	02	JP	JUMP ON POSITIVE	IF (A) ₃₅ = 0, JUMP TO U
74	03	JN	JUMP ON NEGATIVE	IF (A) ₃₅ = 1, JUMP TO U
74	04	JK	JUMP ON KEYS	IF a = KEY WHICH IS SET, OR IF a = 0, JUMP TO U
74	05	HKJ	HALT ON KEYS AND JUMP	STOP IF a = 0, OR IF a = KEY SETTING
74	10	JNB	JUMP ON NO LOW BIT	IF (A) ₀₀ = 0, JUMP TO U
74	11	JB	JUMP ON LOW BIT	IF (A) ₀₀ = 1, JUMP TO U
74	12	JMGI	JUMP MODIFIER GREATER AND INCREMENT	IF (X _a) _{17:00} > 0, JUMP TO U, ALWAYS INCREMENT X _a
74	14	JO	JUMP ON OVERFLOW	JUMP TO U IF OVERFLOW DESIGNATOR SET
74	15	JNO	JUMP ON NO OVERFLOW	JUMP TO U IF OVERFLOW DESIGNATOR NOT SET
74	16	JC	JUMP ON CARRY	JUMP TO U IF CARRY DESIGNATOR SET
74	17	JNC	JUMP ON NO CARRY	JUMP TO U IF CARRY DESIGNATOR NOT SET
75	02	JIC	JUMP ON INPUT CHANNEL BUSY	IF CHANNEL a <u>00</u> CSR IN INPUT MODE, JUMP TO U
75	06	JOC	JUMP ON OUTPUT CHANNEL BUSY	IF CHANNEL a <u>00</u> CSR IS IN OUTPUT MODE, JUMP TO U
75	12	JFC	JUMP ON FUNCTION IN CHANNEL	IF CHANNEL a <u>00</u> CSR IS IN FUNCTION MODE, JUMP TO U

† The a and j designators specify one of the 128 control registers.

INPUT/OUTPUT INSTRUCTIONS

75	00	LIC	LOAD INPUT CHANNEL	(U) - INPUT CONTROL REGISTER, INITIATE INPUT MODE ON CHANNEL a <u>00</u> CSR
75	01	LICM	LOAD INPUT CHANNEL AND MONITOR	(U) - INPUT CONTROL REGISTER AND INITIATE INPUT MODE ON CHANNEL a <u>00</u> CSR WITH MONITOR
75	02	JIC	JUMP ON INPUT CHANNEL BUSY	IF CHANNEL a <u>00</u> CSR IN INPUT MODE, JUMP TO U
75	03	DIC	DISCONNECT INPUT CHANNEL	TERMINATE INPUT MODE ON CHANNEL a <u>00</u> CSR
75	04	LOC	LOAD OUTPUT CHANNEL	(U) - OUTPUT CONTROL REGISTER, INITIATE OUTPUT MODE ON CHANNEL a <u>00</u> CSR
75	05	LOCM	LOAD OUTPUT CHANNEL AND MONITOR	(U) - OUTPUT CONTROL REGISTER, INITIATE OUTPUT MODE ON CHANNEL a <u>00</u> CSR WITH MONITOR
75	06	JOC	JUMP ON OUTPUT CHANNEL BUSY	IF CHANNEL a <u>00</u> CSR IS IN OUTPUT MODE, JUMP TO U
75	07	DOC	DISCONNECT OUTPUT CHANNEL	TERMINATE OUTPUT MODE ON CHANNEL a <u>00</u> CSR
75	10	LFC	LOAD FUNCTION IN CHANNEL	(U) - OUTPUT CONTROL REGISTER, AND INITIATE FUNCTION MODE ON CHANNEL a <u>00</u> CSR
75	11	LFCM	LOAD FUNCTION IN CHANNEL AND MONITOR	(U) - OUTPUT CONTROL REGISTER AND INITIATE FUNCTION MODE ON CHANNEL a <u>00</u> CSR WITH MONITOR
75	12	JFC	JUMP ON FUNCTION IN CHANNEL	IF CHANNEL a OR CSR IS IN FUNCTION MODE, JUMP TO U
75	14	AACI	ALLOW ALL CHANNEL EXTERNAL INTERRUPTS	ALL EXTERNAL INTERRUPTS ARE ALLOWED
75	15	PACI	PREVENT ALL CHANNEL EXTERNAL INTERRUPTS	ALL EXTERNAL INTERRUPTS ARE DISABLED

INDEX REGISTER INSTRUCTIONS

06	0-15	SX	STORE X	(X _a) + U
24	0-17	AX	ADD TO X	(X _a) + (U) + X _a
25	0-17	ANX	ADD NEGATIVE TO X	(X _a) - (U) - X _a
26	0-17	LXM	LOAD X MODIFIER	(U) + X _a _{17:00} * X _a _{35:18} UNCHANGED
27	0-17	LX	LOAD X	(U) + X _a
46	0-17	LXI	LOAD X INCREMENT	(U) + X _a _{35:18} * X _a _{17:00} UNCHANGED
47	0-17	TLEM	TEST LESS OR EQUAL TO MODIFIER	SKIP IF (X _a) _{17:00} ≥ (U); ALWAYS
		TNGM	TEST NOT GREATER THAN MODIFIER	(X _a) _{17:00} + (X _a) _{35:18} * X _a _{17:00}
74	12	JMGI	JUMP MODIFIER GREATER AND INCREMENT	IF (X _a) _{17:00} > 0, JUMP TO U, ALWAYS INCREMENT X _a
74	13	LMJ	LOAD MODIFIER AND JUMP	(P) + X _a _{17:00} JUMP TO U

LOGICAL INSTRUCTIONS

40	0-17	OR	LOGICAL OR	(A) <u>00</u> (U) + A + 1
41	0-17	XOR	LOGICAL EXCLUSIVE OR	(A) <u>00</u> (U) + A + 1
42	0-17	AND	LOGICAL AND	(A) <u>AND</u> (U) + A + 1
43	0-17	MLU	MASKED LOAD UPPER	(U) <u>AND</u> (M) <u>OR</u> (A) <u>AND</u> (M) + A + 1

MISCELLANEOUS INSTRUCTIONS

72	10	EX	EXECUTE	EXECUTE THE INSTRUCTION AT U
74	06	NOP	NO OPERATION	PROCEED TO NEXT INSTRUCTION
73	47	TS	TEST AND SET	IF (U) ₃₅ = 1, INTERRUPT TO 24 _B IF (U) ₃₅ = 0, TAKE NEXT INSTRUCTION. ALWAYS SET (U) ₃₅ = 1; (U) _{35:31} = 0; (U) _{29:00} UNDISTURBED.

EXECUTIVE SYSTEM CONTROL INSTRUCTIONS

72	11	ER	EXECUTIVE RETURN	(PSR) - 00 _B , ONES TO D7 AND D6 AND ZEROS TO D8 AND D5 THRU D0 OF PSR; INTERRUPT TO 24 _B
72	13	PAIJ	PREVENT ALL I/O INTERRUPTS AND JUMP	DISABLE ALL I/O INTERRUPTS AND JUMP TO U
72	14	SCN	STORE CHANNEL NUMBER	NUMBER OF THE INTERRUPTING I/O CHANNEL = U _{3:00} ; IF U IS IN MAIN STORAGE, CLEAR U _{17:04} TO ZERO; IF U IS IN CONTROL REGISTER, CLEAR U _{35:04} TO ZERO
72	15	LPS	LOAD PROCESSOR STATE REGISTER	(U) - PSR
72	16	LSL	LOAD STORAGE LIMITS REGISTER	(U) - STORAGE LIMITS REGISTER
73	14	III	INITIATE INTERPROCESSOR INTERRUPT	INITIATE INTERPROCESSOR INTERRUPT ON CHANNEL a
73	15	SIL	SELECT INTERRUPT LOCATION	IF A = 0, ASSIGN INTERRUPT LOCATIONS TO STORAGE MODULE 0; IF A = 1, ASSIGN INTERRUPT LOCATIONS TO STORAGE MODULE 1; IF A = 2, ASSIGN INTERRUPT LOCATIONS TO STORAGE MODULE 2; IF A = 3, ASSIGN INTERRUPT LOCATIONS TO STORAGE MODULE 3.
73	16	LCR	LOAD CHANNEL SELECT REGISTER	(U) _{3:0} - CSR

ILLEGAL CODES

00	-	-	ILLEGAL CODE	}	CAUSES ILLEGAL-INSTRUCTION INTERRUPT TO ADDRESS 24 _B
07	-	-	ILLEGAL CODE		
33	-	-	ILLEGAL CODE		
37	-	-	ILLEGAL CODE		
72	00	-	ILLEGAL CODE		
72	12	-	ILLEGAL CODE		
72	17	-	ILLEGAL CODE	}	IF GUARD MODE IS SET, CAUSES GUARD MODE INTERRUPT TO ADDRESS 24 _B ; IF GUARD MODE IS NOT SET, CODE IS SAME AS NOP
77	00-17	-	ILLEGAL CODE		
75	13	-	ILLEGAL CODE IF IN GUARD MODE		
75	16	-	ILLEGAL CODE IF IN GUARD MODE		
75	17	-	ILLEGAL CODE IF IN GUARD MODE		

FIXED ADDRESS ASSIGNMENTS

DECIMAL ADDRESS	OCTAL ADDRESS	USE
128	200	STATUS CODE FOR EXTERNAL INTERRUPT ON MULTIPROCESSOR #0
129	201	STATUS CODE FOR EXTERNAL INTERRUPT ON MULTIPROCESSOR #1
130	202	STATUS CODE FOR EXTERNAL INTERRUPT ON MULTIPROCESSOR #2
131-135	203-207	NOT USED
136	210	POWER LOSS INTERRUPT
137	211	I/O ESI ACCESS CONTROL REGISTER PARITY ERROR INTERRUPT
138	212	I/O ISI ACCESS CONTROL REGISTER PARITY ERROR INTERRUPT
139	213	I/O DATA PARITY ERROR INTERRUPT
140-141	214-5	NOT USED
142	216	DAY CLOCK COUNT
143	217	DAY CLOCK INTERRUPT
144	220	ISI INPUT MONITOR INTERRUPT
145	221	ISI OUTPUT MONITOR INTERRUPT
146	222	ISI FUNCTION MONITOR INTERRUPT
147	223	ISI EXTERNAL INTERRUPT
148	224	ESI INPUT MONITOR INTERRUPT
149	225	ESI OUTPUT MONITOR INTERRUPT
150	226	NOT USED
151	227	ESI EXTERNAL INTERRUPT
152	230	NOT USED
153	231	REAL TIME CLOCK INTERRUPT
154	232	INTERPROCESSOR INTERRUPT #0
155	233	INTERPROCESSOR INTERRUPT #1
156	234	NOT USED
157	235	MAIN STORAGE PARITY INTERRUPT (MODULE #1)
158	236	MAIN STORAGE PARITY INTERRUPT (MODULE #2)
159	237	MAIN STORAGE PARITY INTERRUPT (MODULE #3)
160	240	CONTROL REGISTER PARITY ERROR INTERRUPT
161	241	ILLEGAL INSTRUCTION INTERRUPT
162	242	EXECUTIVE RETURN INTERRUPT
163	243	GUARD MODE INTERRUPT
164	244	TEST AND SET INTERRUPT
165	245	FLOATING POINT UNDERFLOW INTERRUPT
166	246	FLOATING POINT OVERFLOW INTERRUPT
167	247	DIVIDE FAULT INTERRUPT
LAST ADDRESS - 1		MAIN STORAGE PARITY ERROR INTERRUPT (MODULE #0)

OCTAL vs MNEMONIC INSTRUCTION CODES

FIRST DIGIT	FUNCTION CODE								
	SECOND DIGIT								
	0	1	2	3	4	5	6	7	
0	SA	SN SNA	SM SMA	SR	SZ	SX			
1	LA	LN LNA	LM LMA	LNMA	AA	ANA	AM AMA	AN ANMA	
2	AU	ANU	BT	LR	AX	ANX	LXM	LX	
3	MI	MSI	MF	DI	DSF	DF			
4	OR	XOR	AND	MLU	TEP	TOP	LXI	TLEN TNGM	
5	TZ	TNZ	TE	TNE	TLE TNG	TG	TW	TNW	
6	TP	TN	SE	SNE	SLE SNG	SG	SW	SNW	
7	JGD	SEE BELOW FOR FUNCTION CODES 71-76							

FUNCTION CODE	FIRST j DIGIT	SECOND j DIGIT							
		0	1	2	3	4	5	6	7
71	0 1	MSE DA	MSNE DAN	MSLE DS	MSG DL	MSW DLN	MSNW DLM	MASL DJZ	MASG DTE
72	0 1	EX	SLJ ER	JPS DS	JNS PAIJ	AH SCN	ANH LPS	AT LSL	ANT
73	0 1	SSC LSSC	DSC LDSC	SSL LSSL	DSL LDL	SSA III	DSA SIL	LSC LCR	DLSC TS
74	0 1	JZ JNB	JNZ JB	JP JMGJ	JN LMJ	JK JJO	HKJ HJND	NOP JC	AAIJ JNC
75	0 1	LIC LFC	LICM LFCM	JIC JFC	DIC +	LOC AACI	LOCM PACI	JOC +	DOC +
76	0 1	FA DFA	FAN DFAN	FM DFM	FD DFD	LUF DFU	LCF DFP	MCDU FEL	CDU FCL

+ ILLEGAL OPERATION CODE IF IN GUARD MODE (GUARD MODE INTERRUPT)
 [X] ILLEGAL OPERATION CODE (ILLEGAL INSTRUCTION INTERRUPT)

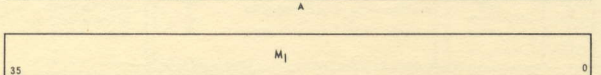
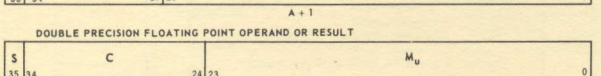
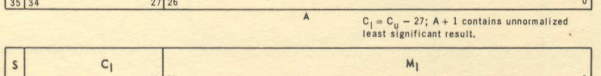
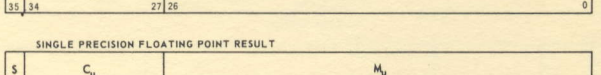
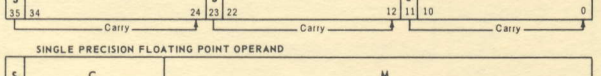
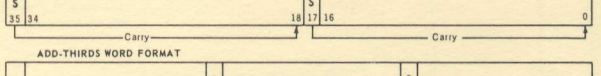
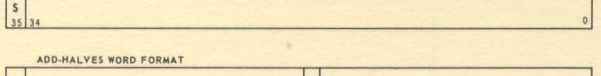
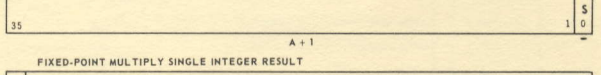
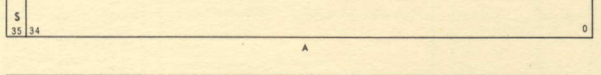
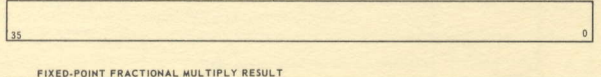
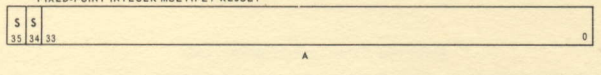
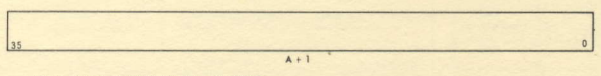
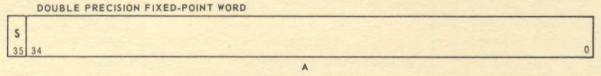
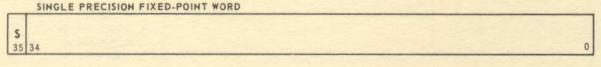
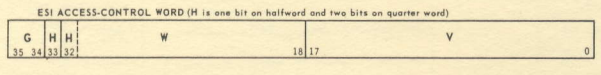
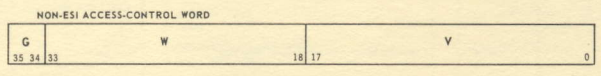
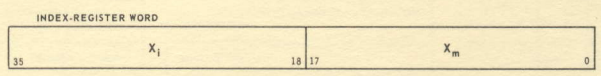
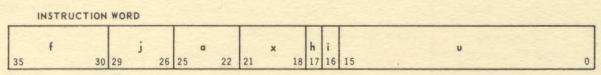
J-DETERMINED PARTIAL-WORD OPERATIONS

S = Sign extension, where the sign is that of the j-determined final contents of A.

J	PSR BIT 17	BIT POSITIONS OF (U) → A, X, or R	BIT POSITIONS OF (A), (X), OR (R) → U
00	-	35-00 → 35-00	35-00 → 35-00
01	-	17-00 → 17-00	17-00 → 17-00
02	-	35-18 → 17-00	17-00 → 35-18
03	-	17-00 → S 17-00	17-00 → 17-00
04	0 1	35-18 → S 17-00 26-18 → 08-00	17-00 → 35-18 08-00 → 16-18
05	0 1	11-00 → S 11-00 08-00 → 08-00	11-00 → 11-00 08-00 → 08-00
06	0 1	23-12 → S 11-00 17-09 → 08-00	11-00 → 23-12 08-00 → 17-09
07	0 1	35-24 → S 11-00 35-27 → 08-00	11-00 → 35-24 08-00 → 35-27
10	-	05-00 → 05-00	05-00 → 05-00
11	-	11-06 → 05-00	05-00 → 11-06
12	-	17-12 → 05-00	05-00 → 17-12
13	-	23-18 → 05-00	05-00 → 23-18
14	-	29-24 → 05-00	05-00 → 29-24
15	-	35-30 → 05-00	05-00 → 35-30
16	-	18 bits* → 17-00	NO TRANSFER
17	-	18 bits* → S 17-00	NO TRANSFER

* If x = 0, h, i, and u are transferred
 If x = 1, u + (X_x)_m is transferred.

UNIVAC 1108 WORD FORMATS



C₁ = C₀ - 27; A + 1 contains unnormalized least significant result.

LOGICAL FUNCTIONS

INCLUSIVE OR
(LOGICAL SUM)

OR	0	1
0	0	1
1	1	1

EXCLUSIVE OR
(LOGICAL DIFFERENCE)

XOR	0	1
0	0	1
1	1	0

AND
(LOGICAL PRODUCT)

AND	0	1
0	0	0
1	0	1

INPUT/OUTPUT STATUS CODES

CODE	MEANING
UNISERVO* VI C/VIII C MAGNETIC TAPE SUBSYSTEM	
2 ³⁵ - 2 ¹⁵	NOT USED
2 ¹⁷	ABNORMAL FRAME COUNT
2 ¹⁶	(POSSIBLE) END OF FILE
2 ¹⁵	END-OF-TAPE WARNING/LOAD PT.
2 ¹⁴	INTERLOCK
2 ¹³	BUSY
2 ¹²	PARITY ERROR
2 ¹¹	LATE ACKNOWLEDGE ERROR
2 ¹⁰	TAPE HASH
2 ⁹	INVALID FUNCTION
2 ⁸ - 2 ⁵	BAD TRACK
2 ⁴	ALWAYS A ONE BIT
2 ³ - 2 ⁰	MAGNITUDE OF ABNORMAL FRAME COUNT
FH-432/FH-880 MAGNETIC DRUM SUBSYSTEM	
04	OVERFLOW ADDRESS
05	SEARCH FIND ADDRESS
06	OVERFLOW PARITY ERROR
07	NON-CONTINUOUS READ PARITY AND, FOR FH-880 ONLY, CHARACTER-COUNT ERROR
14	FAULT
30	CHANNEL SYNCHRONIZER CHARACTER-COUNT ERROR (880 ONLY)
34	END OF FILE
40	NORMAL COMPLETION
50	ILLEGAL FUNCTION
54	ILLEGAL ADDRESS (432 ONLY)
60	CONTROL UNIT SEQUENCE ERROR (880 ONLY)
64	CONTINUOUS READ PARITY ERROR
70	CONTROL UNIT WRITE CHARACTER-COUNT ERROR (880 ONLY)
FASTRAND* MASS STORAGE DRUM SUBSYSTEM	
04	TIME OUT (INPUT)
05	END-OF-POSITION (INPUT)
06	PHASE CHECK ERROR
07	NON-RECONSTRUCTIBLE ERROR
10	DATA RECOVERED (MAINTENANCE USE ONLY)
14	ADDRESS ERROR
20	LATE ACKNOWLEDGE
24	END-OF-POSITION (OUTPUT)
34	SECTOR LENGTH ERROR
40	NORMAL COMPLETION
50	INVALID FUNCTION CODE
54	NO RESPONSE/WRITE LOCKOUT
60	WRITE ERROR
PUNCHED CARD SUBSYSTEM	
20	SYNCHRONIZER SEQUENCE ERROR
30	SYNCHRONIZER COUNTER ERROR
40	NORMAL COMPLETION
50	ILLEGAL FUNCTION
54	READ/PUNCH CHECK ERROR
60	INAPPROPRIATE FUNCTION
70	ILLEGAL CHARACTER
74	INTERLOCK FAULT
HIGH-SPEED PRINTER SUBSYSTEM	
40	NORMAL COMPLETION
44	OUT OF FORMS
50	INVALID FUNCTION
74	INTERLOCK FAULT
PAPER TAPE SUBSYSTEM	
02	OUT OF TAPE (READER OR PUNCH)

CONTROL REGISTER ADDRESS ASSIGNMENTS

OCTAL	PROCESSOR STATE REGISTER (TEMP STORAGE)	DECIMAL	
0		0	
1		1	
13	Xi	11	15 INDEX REGISTERS (X)
14		12	
17		15	4 OVERLAPPED
20		16	
			16 ACCUMULATORS (A)
33		27	
34		28	4 UNASSIGNED
37		31	
40	G	32	
	W (WORD COUNT)	V (BUFFER ADDRESS)	16 INPUT ACCESS CONTROL REGISTERS
57		47	
60	G	48	
	W	V	16 OUTPUT ACCESS CONTROL REGISTERS
77		63	
100	REAL-TIME CLOCK		64
101	REPEAT COUNT REGISTER		65
102	MASK REGISTER		66
103	UNASSIGNED		67
117	UNASSIGNED		79
120	UNASSIGNED		80
121	REPEAT COUNT REGISTER		81
122	MASK REGISTER		82
123	UNASSIGNED		83
137	UNASSIGNED		95
140	NON-INDEXING REGISTER (X ₀)		96
141		97	
	Xi	Xm	16 INDEX REGISTERS (X _E)
153		107	
154		108	4 OVERLAPPED
157		111	
160		112	
			16 ACCUMULATORS (A)
173		123	
174		124	4 UNASSIGNED
177		127	

█ = EXECUTIVE (GUARD MODE PROTECTED)

PROCESSOR STATE REGISTER FORMAT

