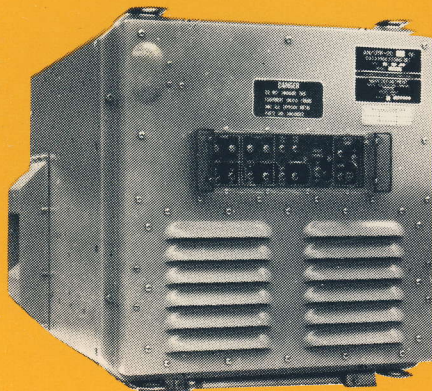


# AN/UYK-20/20A

## Technical Summary



**NESEA**  
**ST. INIGOES, MD 20684-0010**  
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**AN/UYK-20 ISEA**



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## AN/UJK-20 & AN/UJK-20A COMPUTER REPERTOIRE OF INSTRUCTIONS

OCTAL FORMAT	HEXIDECIMAL FORMAT	CODING FORMAT	INSTRUCTION	OPERATION	C	OV	CC
00 0 -	00 -	-	Diagnostic return	If diagnostic jump set R17 - $\mu P$	-	NC	-
00 3 a m	03 a m	BL a,y,m	Byte load	(Y) byte - R <sub>0</sub> ; 0 - R <sub>15</sub> ; 8	0	0	X
01 0 a m	04 a m	LR a,m	Load (Register)	(R <sub>m</sub> ), - , R <sub>0</sub>	0	0	X
01 1 a m	05 a m	LI a,m	Load (Indirect)	(Y*) - R <sub>0</sub>	0	0	X
01 2 a m	06 a m	LK a,y,m	Load (Constant)	(Y*) - R <sub>0</sub>	0	0	X
01 3 a m	07 a m	L a,y,m	Load	(Y) - R <sub>0</sub>	0	0	X
02 0 a 00	08 a 0	PR a	Make positive	If (R <sub>0</sub> ) < 0, (R <sub>0</sub> ) <sup>1</sup> - R <sub>0</sub>	X	X	X
02 0 a 01	08 a 1	NR a	Make negative	If (R <sub>0</sub> ) > 0, (R <sub>0</sub> ) <sup>1</sup> - R <sub>0</sub>	X	X	X
02 0 a 02	08 a 2	RR a	Round	(R <sub>0</sub> ) <sup>1</sup> + (R <sub>0</sub> ) <sup>1</sup> 15 - R <sub>0</sub> 3	X	X	X
02 0 a 04	08 a 4	TCR a	Two's Complement	(R <sub>0</sub> ) <sup>1</sup> - R <sub>0</sub>	X	X	X
02 0 a 05	08 a 5	TCDR a	Two's Complement Double	(R <sub>0</sub> ) <sup>1</sup> - R <sub>0</sub> , R <sub>0</sub> +1 3	X	X	X
02 0 a 06	08 a 6	TCR a	One's Complement	(R <sub>0</sub> ) bit-by-bit complement - R <sub>0</sub>	X	X	X
02 0 a 10	08 a 8	IROR a	Increase R <sub>0</sub> by 1	(R <sub>0</sub> ) + 1 - R <sub>0</sub>	X	X	X
02 0 a 11	08 a 9	DROR a	Decrease R <sub>0</sub> by 1	(R <sub>0</sub> ) - 1 - R <sub>0</sub>	X	X	X
02 0 a 12	08 a A	IRTR a	Increase R <sub>0</sub> by 2	(R <sub>0</sub> ) + 2 - R <sub>0</sub>	X	X	X
02 0 a 13	08 a B	DRTR a	Decrease R <sub>0</sub> by 2	(R <sub>0</sub> ) - 2 - R <sub>0</sub>	X	X	X
02 1 a m	08 a m	LDI a,m	Load Double (indirect)	(Y* Y+1) - R <sub>0</sub> , R <sub>0</sub> +1 3	0	0	X
02 3 a m	08 a m	LD a,y,m	Load Double	(Y, Y+1) - R <sub>0</sub> , R <sub>0</sub> +1 3	0	0	X
03 0 a 00	0C a 0	ER a	Executive Return	Generate interrupt; (P1+1) - R <sub>0</sub> 6	0	0	X
03 0 a 01	0C a 1	SSOR a	Store SR1	(SR1) - R <sub>0</sub>	0	0	X
03 0 a 02	0C a 2	SSTR a	Store SR2	(SR2) - R <sub>0</sub>	0	0	X
03 0 a 03	0C a 3	SCR a	Store Clock	(RTC register) 15; 0 - R <sub>0</sub>	0	0	X
03 0 a 04	0C a 4	LPR a	Load P	(R <sub>0</sub> ) - P	-	NC	-
03 0 a 05	0C a 5	LSOR a	Load SR1	(R <sub>0</sub> ) - SR1	-	NA	-
03 0 a 06	0C a 6	LSOR a	Load SR2	(R <sub>0</sub> ) - SR2	-	NC	-
03 0 a 07	0C a 7	LCR a	Load RTC lower	(R <sub>0</sub> ) - RTC register 15; 0;	-	NC	-
03 0 00 10	0C 0 8	ECR	Enable Clock	Enable RTC reg. (countup and interrupt)	-	NC	-
03 0 00 11	0C 0 9	DCR	Disable Clock	Disable RTC reg. (countup and interrupt)	-	NC	-
03 0 a 12	0C a A	LEM a	Load and Enable Mon. clock	(R <sub>0</sub> ) - Mon. clock reg; enable countdown and interrupt	-	NC	-
03 0 00 13	0C 0 B	DM	Disable Monitor clock	Disable Mon. clock reg. (countdown and interrupt)	-	NC	-
03 0 a 14	0C a C	LCRD a	Load and enable Clock Double	(R <sub>0</sub> , R <sub>0</sub> +1) - RTC; enable countup only 3	-	NC	-
03 0 a 15	0C a D	SCRD a	Store Clock Double	(RTC Register) - R <sub>0</sub> , R <sub>0</sub> +1 3 5	0	0	X
03 0 00 16	0C 0 E	ECIR	Enable Clock Interrupt	Enable RTC overflow interrupt	-	NC	-
03 0 00 17	0C 0 F	DCIR	Disable Clock Interrupt	Disable RTC overflow interrupt	-	NC	-
03 3 a m	0F a m	LM a,y,m	Load multiple	(Y, Y+m-1) - R <sub>0</sub> , R <sub>0</sub>	-	NC	-
# 04 0 a 00	10 a 0	SDR a	Square Root	(R <sub>0</sub> , R <sub>0</sub> +1) - R <sub>0</sub> , R <sub>0</sub> - R <sub>0</sub> 3	0	0	X
04 0 a 01	10 a 1	RVR a	Reverse Register	Reverse (R <sub>0</sub> )	0	0	X
04 0 a 02	10 a 2	CNT a	Count Ones	Number of binary ones in R <sub>0</sub> - R <sub>0</sub> +1	-	NC	-
04 0 a 03	10 a 3	SFR a	Scale Factor	Shift (R <sub>0</sub> , R <sub>0</sub> +1) left until (R <sub>0</sub> ) 15 3 -	-	NC	-
04 3 a m	13 a m	BLX a,y,m	Byte Load and index by 1	(Y) byte - R <sub>0</sub> , (R <sub>m</sub> +1) - R <sub>m</sub> 2	0	0	X
05 0 a m	14 a m	SBR a,m	Set Bit	1 - (R <sub>0</sub> ) <sub>m</sub>	0	0	X
05 1 a m	15 a m	LXI a,m	Load and index by 1 (Indirect)	(Y*) - R <sub>0</sub> , (R <sub>m</sub> +1) - R <sub>m</sub> 2	0	0	X
05 3 a m	17 a m	LX a,y,m	Load and index by 1	(Y*) - R <sub>0</sub> , (R <sub>m</sub> +1) - R <sub>m</sub> 2	0	0	X
06 0 a m	18 a m	ZBR a,m	Zero Bit	0 - (R <sub>0</sub> ) <sub>m</sub>	0	0	X
06 1 a m	19 a m	LDXI a,m	Load Double Index by 2 (Indirect)	(Y*, Y*+1) - R <sub>0</sub> , R <sub>0</sub> +1; 2 3 4	0	0	X
06 3 a m	1B a m	LDB a,y,m	Load Double, index by 2	(R <sub>m</sub> ) <sup>2</sup> - R <sub>m</sub>	0	0	X
07 0 a m	1C a m	CBR a,m	Compare Bit	(Y, Y*+1) - R <sub>0</sub> , R <sub>0</sub> ; (R <sub>m</sub> ) <sup>2</sup> + R <sub>m</sub> 0 2 4	0	0	X
07 1 00 m	1D 0 m	LPI m	Load PSW (Indirect)	Test bit m of R <sub>0</sub> for zero	0	0	X
07 3 00 m	1F 0 m	LP y,m	Load PSW	(Y*, Y*+1, Y*+2) - P, SR1, SR2; enable power fault interrupt	-	NA	-
10 0 a m	20 a m	LRSR a,m	Logical Right Shift (Register)	enable power fault interrupt	-	NC	-
10 2 a m	22 a m	LRS a,y,m	Logical Right Shift	Shift (R <sub>0</sub> ) right (R <sub>m</sub> ) 5 0 places, zero fill	0	0	X
10 3 a m	23 a m	BS a,y,m	Byte Store	Shift (R <sub>0</sub> ) right Y-0 places, zero fill	0	0	X
11 0 a m	24 a m	ARSR a,m	Algebraic Right Shift (Register)	Shift (R <sub>0</sub> ) right (R <sub>m</sub> ) 5 0 places, sign fill	0	0	X
11 1 a m	25 a m	SI a,m	Store (Indirect)	(R <sub>0</sub> ) - Y*	-	NC	-
11 2 a m	26 a m	ARS a,y,m	Algebraic Right Shift	Shift (R <sub>0</sub> ) right Y-0 places, sign fill	0	0	X
11 3 a m	27 a m	S a,y,m	Store	(R <sub>0</sub> ) - Y*	-	NC	-
12 0 a m	28 a m	LRDR a,m	Logical Right Double shift (Register)	Shift (R <sub>0</sub> , R <sub>0</sub> +1) right (R <sub>m</sub> ) 5 0 places, zero fill 3	0	0	X
12 1 a m	29 a m	SDI a,m	Store Double (Indirect)	(R <sub>0</sub> , R <sub>0</sub> +1) - Y* Y+1 3	-	NC	-
12 2 a m	2A a m	LRO a,y,m	Logical Right Double shift	Shift (R <sub>0</sub> , R <sub>0</sub> +1) right Y-0 places, zero fill	0	0	X
12 3 a m	2B a m	SD a,y,m	Store Double	(R <sub>0</sub> , R <sub>0</sub> +1) - Y, Y+1 3	-	NC	-

# Optional Math Pac Instructions ① Count = 31 for all zeros or all ones. ② if a f m ③ a,y,m,y must be even  
④ if a f m ⑤ C<sub>0</sub> set on R<sub>0</sub>+1 only ⑥ if Class II interrupts enabled

OCTAL FORMAT o f a m	HEXIDECIMAL FORMAT OP a m	CODING FORMAT	INSTRUCTION	OPERATION	C	OV	CC
13 0 a m	2C a m	ANDR a,m	Algebraic Right Double shift	Shift $(R_n, R_{n+1})$ right $(R_m)_{5/6}$ places, sign fill	0	0	X
13 2 a m	2E a m	ARD a,y,m	Algebraic Right Double shift	Shift $(R_n, R_{n+1})$ right $Y_{5/6}$ places, sign fill	0	0	X
13 3 a m	2F a m	SM a,y,m	Store Multiple	$(R_n, R_{n+1}) \rightarrow Y, Y-m-a$	-	NC	-
14 0 a m	30 a m	ALSR a,m	Algebraic Left shift (Register)	Shift $(R_n)$ left $(R_m)_{5/6}$ places, zero fill	0	X	-
14 2 a m	32 a m	ALS a,y,m	Algebraic Left shift	Shift $(R_n)$ left $Y_{5/6}$ places, zero fill	0	X	X
14 3 a m	33 a m	BSX a,m	Byte Store, index by 1	$(R_n)_{7/8} \rightarrow Y_{5/6}, (R_{n+1}) \rightarrow R_m$	-	NC	-
15 0 a m	34 a m	CLSR a,m	Circular Left shift (Register)	Shift $(R_n)$ circularly left $(R_m)_{5/6}$ places	0	0	X
15 1 a m	35 a m	SLX a,m	Store index by 1 (Indirect)	$(R_n) \rightarrow Y^*, (R_{m+1}) \rightarrow R_m$	-	NC	-
15 2 a m	36 a m	CLS a,y,m	Circular Left shift	Shift $(R_n)$ circularly left $Y_{5/6}$ places	0	0	X
15 3 a m	37 a m	SLR a,y,m	Store, index by 1	$(R_n) \rightarrow Y^*, (R_{m+1}) \rightarrow R_m$	-	NC	-
16 0 a m	38 a m	ALDR a,m	Algebraic Left Double shift (Register)	Shift $(R_n, R_{n+1})$ left $(R_m)_{5/6}$ places, zero fill	0	X	X
16 1 a m	39 a m	SDXI a,m	Store Double index by 2 (Indirect)	$(R_n, R_{n+1}) \rightarrow Y^*, Y^*+1$ ; $(R_{m+2}) \rightarrow R_{m+2} \text{ } \textcircled{3}$	-	NC	-
16 2 a m	3A a m	ALD a,y,m	Algebraic Left Double shift	Shift $(R_n, R_{n+1})$ left $Y_{5/6}$ places, zero fill	0	X	X
16 3 a m	3B a m	SDX a,y,m	Store Double, index by 2	$(R_n, R_{n+1}) \rightarrow (Y^*, Y^*+1); (R_{m+2}) \rightarrow R_{m+2} \text{ } \textcircled{3}$	NC	-	-
17 0 a m	3C a m	CLDR a,m	Circular Left Double shift (Register)	Shift $(R_n, R_{n+1})$ circularly left $(R_m)_{5/6}$ places	0	0	X
17 1 00 m	3D 0 m	SZ 1 m	Store Zeros (Indirect)	$0 \rightarrow Y^*$	0	NC	-
17 2 a m	3E a m	CLD a,y,m	Circular Left Double shift	Shift $(R_n, R_{n+1})$ circularly left $Y_{5/6}$ places	0	0	X
17 3 00 m	3F 0 m	SZ 3 m	Store Zeros	$0 \rightarrow Y$	-	NC	-
20 0 a m	40 a m	SUR a,m	Subtract (Register)	$(R_n) - (R_m) \rightarrow R_n$	X	X	X
20 1 a m	41 a m	SUI a,m	Subtract (Indirect)	$(R_n) - (Y^*) \rightarrow R_n$	X	X	X
20 2 a m	42 a m	SUK a,y,m	Subtract (Constant)	$(R_n) - Y \rightarrow R_n$	X	X	X
20 3 a m	43 a m	SUM a,m	Subtract (Register)	$(R_n) - (Y^*) \rightarrow R_n$	X	X	X
21 0 a m	44 a m	SURD a,m	Subtract Double (Register)	$(R_n, R_{n+1}) - (R_m, R_{m+1}) \rightarrow R_n, R_{n+1}$	X	X	X
21 1 a m	45 a m	SUDI a,m	Subtract Double (Indirect)	$(R_n, R_{n+1}) - (Y^*, Y^*+1) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	X	X	X
21 3 a m	47 a m	SUD a,y,m	Subtract Double	$(R_n, R_{n+1}) - (Y^*, Y^*+1) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	X	X	X
22 0 a m	48 a m	ADR a,m	Add (Register)	$(R_n) + (R_m) \rightarrow R_n$	X	X	X
22 1 a m	49 a m	ADI a,m	Add (Indirect)	$(R_n) + (Y^*) \rightarrow R_n$	X	X	X
22 2 a m	4A a m	AK a,y,m	Add (Constant)	$(R_n) + Y \rightarrow R_n$	X	X	X
22 3 a m	4B a m	AAY a,m	Add	$(R_n) + (Y^*) \rightarrow R_n$	X	X	X
22 4 a m	4C a m	ADR a,m	Add Double (Register)	$(R_n, R_{n+1}) + (R_m, R_{m+1}) \rightarrow R_n, R_{n+1}$	X	X	X
23 1 a m	4D a m	ADI a,m	Add Double (Indirect)	$(R_n, R_{n+1}) + (Y^*, Y^*+1) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	X	X	X
23 3 a m	4F a m	AD a,y,m	Add Double	$(R_n, R_{n+1}) + (Y^*, Y^*+1) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	X	X	X
24 0 a m	50 a m	CR a,m	Compare (Register)	$(R_n) < (R_m)$	X	X	X
24 1 a m	51 a m	CI a,m	Compare (Indirect)	$(R_n) < (Y^*)$	X	X	X
24 2 a m	52 a m	CK a,y,m	Compare (Constant)	$(R_n) < Y$	X	X	X
24 3 a m	53 a m	C a,y,m	Compare	$(R_n) < (Y)$	X	X	X
25 0 a m	54 a m	CDR a,m	Compare Double (Register)	$(R_n, R_{n+1}) < (R_m, R_{m+1}) \text{ } \textcircled{3}$	X	X	X
25 1 a m	55 a m	CDI a,m	Compare Double (Indirect)	$(R_n, R_{n+1}) < (Y^*, Y^*+1) \text{ } \textcircled{3}$	X	X	X
25 3 a m	57 a m	CD a,y,m	Compare Double	$(R_n, R_{n+1}) < (Y^*, Y^*+1) \text{ } \textcircled{3}$	X	X	X
26 0 a m	58 a m	MR a,m	Multiply (Register)	$(R_n) \times (R_m) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	0	0	X
26 1 a m	59 a m	MI a,m	Multiply (Indirect)	$(R_n) \times (Y^*) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	0	0	X
26 2 a m	5A a m	MSK a,y,m	Multiply (Constant)	$(R_n) \times Y \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	0	0	X
26 3 a m	5B a m	MSR a,y,m	Multiply	$(R_n) \times (Y^*) \rightarrow R_n, R_{n+1} \text{ } \textcircled{3}$	0	0	X
27 0 a m	5C a m	DR a,m	Divide (Register)	$(R_n, R_{n+1}) / (R_m) \rightarrow R_{n+1}$ ; remainder $\rightarrow R_n \text{ } \textcircled{3}$	X	X	X
27 1 a m	5D a m	DI a,m	Divide (Indirect)	$(R_n, R_{n+1}) / (Y^*) \rightarrow R_{n+1}$ ; remainder $\rightarrow R_n \text{ } \textcircled{3}$	X	X	X
27 2 a m	5E a m	DK a,y,m	Divide (Constant)	$(R_n, R_{n+1}) / Y \rightarrow R_{n+1}$ ; remainder $\rightarrow R_n \text{ } \textcircled{3}$	X	X	X
27 3 a m	5F a m	D a,y,m	Divide	$(R_n, R_{n+1}) / (Y^*) \rightarrow R_{n+1}$ ; remainder $\rightarrow R_n \text{ } \textcircled{3}$	X	X	X
30 0 a m	60 a m	ANDR a,m	AND (Register)	$(R_n) \wedge (R_{m+1}) \rightarrow R_n \text{ } \textcircled{3}$	0	0	X
30 1 a m	61 a m	ANDI a,m	AND (Indirect)	$(R_n) \wedge (Y^*) \rightarrow R_n$	0	0	X
30 2 a m	62 a m	ANDR a,y,m	AND (Constant)	$(R_n) \wedge Y \rightarrow R_n$	0	0	X
30 3 a m	63 a m	AND a,y,m	AND	$(R_n) \wedge (Y^*) \rightarrow R_n$	0	0	X
31 0 a m	64 a m	ORR a,m	OR (Register)	$(R_n) \vee (R_{m+1}) \rightarrow R_n \text{ } \textcircled{3}$	0	0	X
31 1 a m	65 a m	OR I a,m	OR (Indirect)	$(R_n) \vee (Y^*) \rightarrow R_n$	0	0	X
31 2 a m	66 a m	ORK a,y,m	OR (Constant)	$(R_n) \vee Y \rightarrow R_n$	0	0	X
31 3 a m	67 a m	OR a,y,m	OR	$(R_n) \vee (Y^*) \rightarrow R_n$	0	0	X
32 0 a m	68 a m	XDRR a,m	Exclusive OR (Register)	$(R_n) \oplus (R_{m+1}) \rightarrow R_n \text{ } \textcircled{3}$	0	0	X
32 1 a m	69 a m	XDR I a,m	Exclusive OR (Indirect)	$(R_n) \oplus (Y^*) \rightarrow R_n$	0	0	X
32 2 a m	6A a m	XDRR a,y,m	Exclusive OR (Constant)	$(R_n) \oplus Y \rightarrow R_n$	0	0	X
32 3 a m	6B a m	XDR a,y,m	Exclusive OR	$(R_n) \oplus (Y^*) \rightarrow R_n$	0	0	X
32 4 a m	6C a m	MSR a,y,m	Masked Substitute (Register)	$[(R_{n+1})_n]_n \wedge (R_m) \rightarrow R_{n+1} \text{ } \textcircled{3}$	0	0	X
33 1 a m	6D a m	MSI a,m	Masked Substitute (Indirect)	$[(R_{n+1})_n]_n \wedge (Y^*) \rightarrow R_{n+1} \text{ } \textcircled{3}$	0	0	X
33 2 a m	6E a m	MSK a,y,m	Masked Substitute (Constant)	$[(R_{n+1})_n]_n \wedge Y \rightarrow R_{n+1} \text{ } \textcircled{3}$	0	0	X
33 3 a m	6F a m	MS a,y,m	Masked Substitute	$[(R_{n+1})_n]_n \wedge (Y^*) \rightarrow R_{n+1} \text{ } \textcircled{3}$	0	0	X
34 0 a m	70 a m	CMR a,m	Compare Masked (Register)	$[(R_n) \wedge (R_{m+1})]; [(R_m) \wedge (R_{n+1})] \text{ } \textcircled{3}$	0	0	X

② if # a m    ③ a,m,y must be even

OCTAL FORMAT o f a m	HEXIDECIMAL FORMAT OP a m	CODING FORMAT	INSTRUCTION	OPERATION	C	OV	CC
34 1 a m	71 a m	CM I a,m	Compare Masked (Indirect)	$[(R_n) \wedge (R_{m+1})]; [(Y^*) \wedge (R_{n+1})] \text{ } \textcircled{3}$	0	0	X
34 2 a m	72 a m	CMK a,y,m	Compare Masked (Constant)	$[(R_n) \wedge (R_{m+1})]; [(Y \wedge (R_{n+1}))] \text{ } \textcircled{3}$	0	0	X
34 3 a m	73 a m	CM a,y,m	Compare Masked	$[(R_n) \wedge (R_{m+1})]; [(Y) \wedge (R_{n+1})] \text{ } \textcircled{3}$	0	0	X
35 0 00 m	74 0 0	IOCR	Input/Output Command	Execute (0140); $\rightarrow 0140_{15,14}$	-	NC	-
35 1 00 m	75 0 0	BF 1 m	Biased Fetch (Indirect)	$(Y^*) - CC; 1 \rightarrow Y^*_{15,14}$	0	0	X
35 2 00 m	76 0 0	RF a,y,m	Biased Fetch	Execute (Y); $Y^* \rightarrow Y^*$	-	NA	-
35 3 00 m	77 0 0	BF a,y,m	Biased Fetch	$(Y^*) - CC; 1 \rightarrow Y^*_{15,14}$	0	0	X
#37 0 a m	7C 0 a	FC a	Page 6	Trig & Hyperbolic	-	NC	-
#37 0 a 010	7C 0 a	F a,y	Floating Point Compare	$(R_n, R_{n+1}); (Y, Y+1)$ $\textcircled{7}$ ; $\textcircled{8}$	0	0	X
#37 0 a 011	7C 0 a	F a,y	FXC a	Fixed to Floating Point Conversion	-	NC	-
#37 0 a 012	7C 0 a	F a,y	FLC a	Floating Point to Fixed Conversion	-	NC	-
#37 0 a 013	7C 0 a	F a,y	NF a	Floating Point Normalize	-	NC	-
#37 0 a 016	7C 0 a	F a,y	EAL a,y	Algebraic Left Quadruple Shift	Shift $(R_n, R_{n+1}, R_{n+2}, R_{n+3})$ left $Y_{5/6}$ places, zero fill	0	X
#37 0 a 017	7C 0 a	F a,y	EAR a,y	Algebraic Right Quadruple Shift	Shift $(R_n, R_{n+1}, R_{n+2}, R_{n+3})$ right $Y_{5/6}$ places, sign fill	0	X
40 0 00 m	80 0 0	JER m	Jump Equal	If CC indicates = or 0; $(R_m) \rightarrow P$	-	NC	-
40 0 01 m	80 1 0	JNER m	Jump Not Equal	If CC indicates $\neq$ or not 0; $(R_m) \rightarrow P$	-	NC	-
40 0 02 m	80 2 0	JGER m	Jump Greater or Equal	If CC indicates $\geq$ or +; $(R_m) \rightarrow P$	-	NC	-
40 0 03 m	80 3 0	JLSR m	Jump Less	If CC indicates $<$ or -; $(R_m) \rightarrow P$	-	NC	-
40 0 04 m	80 4 0	JOR m	Jump Or	If overflow set; $(R_m) \rightarrow P$	-	NC	-
40 0 05 m	80 5 0	JCR m	Jump Carry	If carry set; $(R_m) \rightarrow P$	-	NC	-
40 0 06 m	80 6 0	JPR m	Jump Power out of Tolerance	If power out of tolerance; $(R_m) \rightarrow P$	-	NC	-
40 0 07 m	80 7 0	JBR m	Jump Bootstrap 2 selected	If bootstrap 2 selected; $(R_m) \rightarrow P$	-	NC	-
40 0 10 m	80 8 0	JSR m	Jump	$(R_m) \rightarrow P$	-	NC	-
40 0 11 m	80 9 0	JSR m	Jump after Stop	Stop; $(R_m) \rightarrow P$	-	NC	-
40 0 12 m	80 A 0	JKSR 1,m	Jump, If Key set-Stop, then jump (Register)	If key 1 set, stop; $(R_m) \rightarrow P$	-	NC	-
40 0 13 m	80 B 0	JKSR 2,m	Jump, If Key set-Stop, then jump (Register)	If key 2 set, stop; $(R_m) \rightarrow P$	-	NC	-
40 1 0 d	81 0 d	LJ xD	Local Jump	$(P) + D = P$	-	NC	-
40 2 00 m	82 0 0	JE Y,m	Jump Equal	If CC indicates = or 0; $Y \rightarrow P$	-	NC	-
40 2 01 m	82 1 0	JNE Y,m	Jump Not Equal	If CC indicates $\neq$ or not 0; $Y \rightarrow P$	-	NC	-
40 2 02 m	82 2 0	JGE Y,m	Jump Greater than or Equal	If CC indicates $\geq$ or +; $Y \rightarrow P$	-	NC	-
40 2 03 m	82 3 0	JLS Y,m	Jump Less	If CC indicates $<$ or -; $Y \rightarrow P$	-	NC	-
40 2 04 m	82 4 0	JO Y,m	Jump on Overflow	If overflow set; $Y \rightarrow P$	-	NC	-
40 2 05 m	82 5 0	JCY,m	Jump on Carry	If carry set; $Y \rightarrow P$	-	NC	-
40 2 06 m	82 6 0	JPT Y,m	Jump If Power out of Tolerance	If power out of tolerance; $Y \rightarrow P$	-	NC	-
40 2 07 m	82 7 0	JB Y,m	Jump If Bootstrap 2 selected	If bootstrap 2 selected; $Y \rightarrow P$	-	NC	-
40 2 10 m	82 8 0	JY,m	Jump	$Y \rightarrow P$	-	NC	-
40 2 11 m	82 9 0	JSY,m	Jump after Stop	Stop; $Y \rightarrow P$	-	NC	-
40 2 12 m	82 A 0	JKS 1,Y,m	Jump, If Key set-Stop, then jump	If key 1 set, stop; $Y \rightarrow P$	-	NC	-
40 2 13 m	82 B 0	JKS 2,Y,m	Jump, If Key set-Stop, then jump	If key 2 set, stop; $Y \rightarrow P$	-	NC	-
40 3 00 m	83 0 0	JE Y*,m	Jump Equal	If CC indicates = or 0; $(Y) \rightarrow P$	-	NC	-
40 3 01 m	83 1 0	JNE Y*,m	Jump Not Equal	If CC indicates $\neq$ or not 0; $(Y) \rightarrow P$	-	NC	-
40 3 02 m	83 2 0	JGE Y*,m	Jump Greater or Equal	If CC indicates $\geq$ or +; $(Y) \rightarrow P$	-	NC	-
40 3 03 m	83 3 0	JLS Y*,m	Jump Less	If CC indicates $<$ or -; $(Y) \rightarrow P$	-	NC	-
40 3 04 m	83 4 0	JO Y*,m	Jump on Overflow	If overflow set; $(Y) \rightarrow P$	-	NC	-
40 3 05 m	83 5 0	JCY*,m	Jump on Carry	If carry set; $(Y) \rightarrow P$	-	NC	-
40 3 06 m	83 6 0	JPT Y*,m	Jump If Power out of Tolerance	If power out of tolerance; $(Y) \rightarrow P$	-	NC	-
40 3 07 m	83 7 0	JB Y*,m	Jump If Bootstrap 2 selected	If bootstrap 2 selected; $(Y) \rightarrow P$	-	NC	-
40 3 10 m	83 8 0	JY*,m	Jump	$(Y) \rightarrow P$	-	NC	-
40 3 11 m	83 9 0	JS Y*,m	Jump after Stop	Stop; $(Y) \rightarrow P$	-	NC	-
40 3 12 m	83 A 0	JKS 1,Y*,m	Jump, If Key set-Stop, then jump	If key 1 set, stop; $(Y) \rightarrow P$	-	NC	-
40 3 13 m	83 B 0	JKS 2,Y*,m	Jump, If Key set-Stop, then jump	If key 2 set, stop; $(Y) \rightarrow P$	-	NC	-
41 0 a m	84 a m	XJR a,m	Index Register	If $(R_n) \neq 0; (R_n) 1 \rightarrow R_n, (R_m) \rightarrow P$	-	NC	-
41 1 d	85 d	LJf xD	Local Jump (Indirect)	$(P) \wedge D = P$	-	NC	-
41 2 a m	86 a m	XJAY a,m	Index Jump	If $(R_n) \neq 0; (R_n) 1 \rightarrow R_n, Y \rightarrow P$	-	NC	-
41 3 a m	87 a m	XJAY a,m	Index Jump	If $(R_n) \neq 0; (R_n) 1 \rightarrow R_n, (Y) \rightarrow P$	-	NC	-

# Optional MacPac Instruction

③ a,m,y must be even

⑦ cannot be executed via execute remote

⑧ operands must be normalized

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OCTAL FORMAT	HEXIDECIMAL FORMAT	CODING FORMAT	INSTRUCTION	OPERATION	C	OV	CC
0 1 a m	0P a m						
42 0 a m	88 a m	JLRR a,m	Jump, Link Register (Register)	$(R_1 + 1) - R_0, (R_1) \rightarrow P$	-	NC	
42 0 a m	8A a m	JLR a,m	Jump, Link Register	$(P) + 2 - R_0, (R_1) \rightarrow P$	-	NC	
42 3 a m	8B a m	JLR a*,y,m	Jump, Link Register	$(P) + 2 - R_0, (Y) \rightarrow P$	-	NC	
43 1 d	8D d	LJLM x,d	Local Jump, Link Memory	$(P) + 1 - (P) + D; (P) + D + 1 - P$	-	NC	
43 2 00 m	8E 0 m	JLM y,m	Jump, Link Memory	$(P) + 2 - Y, (Y) \rightarrow P$	-	NC	
43 3 00 m	8F 0 m	JLM *,y,m	Jump, Link Memory	$(P) + 2 - (Y); (Y) + 1 - P$	-	NC	
44 0 a m	90 a m	JZR a,m	Jump Zero (Register)	If $(R_0) = 0; (R_1) \rightarrow P$	-	NC	
44 1 d	91 d	LJE x,d	Local Jump Equal	If $(R_0) \text{ CCs } = \text{ or } 0; (P) + D - P$	-	NC	
44 2 00 m	92 0 m	JZ y,m	Jump Zero	If $(R_0) = 0; Y \rightarrow P$	-	NC	
44 3 a m	93 a m	JZ a*,y,m	Jump Zero	If $(R_0) = 0; (Y) \rightarrow P$	-	NC	
45 0 a m	94 a m	JNZR a,m	Jump Not Zero (Register)	If $(R_0) \neq 0; (R_1) \rightarrow P$	-	NC	
45 1 d	95 d	LINE x,d	Local Jump Not Equal	If $(R_0) \text{ CCs } \neq \text{ for not } 0; (P) + D - P$	-	NC	
45 2 a m	96 a m	JNZ a*,y,m	Jump Not Zero	If $(R_0) \neq 0; Y \rightarrow P$	-	NC	
45 3 a m	97 a m	JNZ a*,y,m	Jump Not Zero	If $(R_0) \neq 0; (Y) \rightarrow P$	-	NC	
46 0 a m	98 a m	JPR a,m	Jump Positive (Register)	If $(R_0) > (R_1) \rightarrow P$	-	NC	
46 1 d	99 d	LJGE x,d	Local Jump Greater or Equal	If $(R_0) \text{ CCs } \geq \text{ or } +; (P) + D - P$	-	NC	
46 2 a m	9A a m	JP a*,y,m	Jump Positive	If $(R_0) > 0; Y \rightarrow P$	-	NC	
46 3 a m	9B a m	JP a*,y,m	Jump Positive	If $(R_0) > 0; (Y) \rightarrow P$	-	NC	
47 0 a m	9C a m	JNR a,m	Jump Negative (Register)	If $(R_0) < (R_1) \rightarrow P$	-	NC	
47 1 d	9D d	LJLS x,d	Local Jump Less	If $(R_0) \text{ CCs } < \text{ or } -; (P) + D - P$	-	NC	
47 2 a m	9E a m	JN a*,y,m	Jump Negative	If $(R_0) < 0; Y \rightarrow P$	-	NC	
47 3 a m	9F a m	JN a*,y,m	Jump Negative	If $(R_0) < 0; (Y) \rightarrow P$	-	NC	
#50 0 a m	AD a m	FSUR a,m	Floating point subtract (Register)	$(R_0, R_{2+1}) - (R_m, R_{m+1}) - R_0$ $R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#50 1 a m	A1 a m	FSUI a,m	Floating point Subtract (Indirect)	$(R_0, R_{2+1}) - (Y*, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#50 3 a m	A3 a m	FSU a*,y,m	Floating point Subtract	$(R_0, R_{2+1}) - (Y, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#51 0 a m	A4 a m	FAR a,m	Floating point Add (Register)	$(R_0, R_{2+1}) + (R_m, R_{m+1}) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#51 1 a m	A5 a m	FAI a,m	Floating point Add (Indirect)	$(R_0, R_{2+1}) + (Y*, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#51 3 a m	A7 a m	FA a*,y,m	Floating point Add	$(R_0, R_{2+1}) + (Y, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#52 0 a m	A8 a m	FMR a,m	Floating point Multiply (Register)	$(R_0, R_{2+1}) \cdot (R_m, R_{m+1}) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#52 1 a m	A9 a m	FMI a,m	Floating point Multiply (Indirect)	$(R_0, R_{2+1}) \cdot (Y*, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#52 3 a m	AB a m	FM a*,y,m	Floating point Multiply	$(R_0, R_{2+1}) \cdot (Y, Y+1) - R_0, R_{2+1}; \text{Res.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#53 0 a m	AC a m	FDR a,m	Floating point Divide (Register)	$(R_0, R_{2+1}) / (R_m, R_{m+1}) - R_0, R_{2+1}; \text{Rem.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#53 1 a m	AD a m	FDI a,m	Floating point Divide (Indirect)	$(R_0, R_{2+1}) / (Y*, Y+1) - R_0, R_{2+1}; \text{Rem.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
#53 3 a m	AF a m	FD a*,y,m	Floating point Divide	$(R_0, R_{2+1}) / (Y, Y+1) - R_0, R_{2+1}; \text{Rem.} \rightarrow R_{2+2}, R_{2+3}$	X	X	X
*54 0 a m	B0 a m	LARR a,m	Load Address Register (Register)	$(R_1) \rightarrow AR; \text{SEE LEGEND}$	-	NC	
*54 1 a m	B1 a m	LARI a,m	Load Address Register (Indirect)	$(Y) \rightarrow AR; \text{SEE LEGEND}$	-	NC	
*54 3 a m	B3 a m	LARR a*,y,m	Load Address Register Multiple	$(Y, \dots, Y + u) \rightarrow AR; \dots, AR + u$	-	NC	
*55 0 a m	B4 a m	SARR a,m	Store Address Register (Register)	$(AR) \rightarrow R_m$	-	NC	
*55 1 a m	B5 a m	SARI a,m	Store Address Register (Indirect)	$(AR) \rightarrow Y*$	-	NC	
*55 3 a m	B7 a m	SARR a*,y,m	Store Address Register Multiple	$(AR, \dots, AR + u) \rightarrow Y, \dots, Y + u$	-	NC	
#56 0 a m	B8 a m	MDR a,m	Multiply Double (Register)	$(R_0, R_{2+1}) \cdot (R_m, R_{m+1}) - R_0, R_{2+1}; R_{2+2}, R_{2+3} \text{ } \textcircled{3}$	0	0	X
#56 1 a m	B9 a m	MDI a,m	Multiply Double (Indirect)	$(R_0, R_{2+1}) \cdot (Y*, Y+1) - R_0, R_{2+1}; R_{2+2}, R_{2+3} \text{ } \textcircled{3}$	0	0	X
#56 3 a m	BB a m	MD a*,y,m	Multiply Double	$(R_0, R_{2+1}) \cdot (Y, Y+1) - R_0, R_{2+1}; R_{2+2}, R_{2+3} \text{ } \textcircled{3}$	0	0	X
#57 0 a m	BC a m	DDR a,m	Divide Double (Register)	$(R_0, R_{2+1}, R_{2+2}, R_{2+3}) / (R_m, R_{m+1}) - R_{2+2}, R_{2+3}; \text{Rem.} \rightarrow R_{2+4}, R_{2+5} \text{ } \textcircled{3}$	0	X	X
#57 1 a m	BD a m	DDI a,m	Divide Double (Indirect)	$(R_0, R_{2+1}, R_{2+2}, R_{2+3}) / (Y*, Y+1) - R_{2+2}, R_{2+3}; \text{Rem.} \rightarrow R_{2+4}, R_{2+5} \text{ } \textcircled{3}$	0	X	X
#57 3 a m	BF a m	DD a*,y,m	Divide Double	$(R_0, R_{2+1}, R_{2+2}, R_{2+3}) / (Y, Y+1) - R_{2+2}, R_{2+3}; \text{Rem.} \rightarrow R_{2+4}, R_{2+5} \text{ } \textcircled{3}$	0	X	X
60 0 a m	C8 a m	LLRS a,m	Literal Logical Right Shift	Shift $(R_0)$ right m places, zero fill	0	0	X
60 1 a m	C1 a m	LARS a,m	Literal Algebraic Right Shift	Shift $(R_0)$ right m places, sign fill	0	0	X
60 2 a m	C2 a m	LLRD a,m	Literal Logical Right Double shift	Shift $(R_0, R_{2+1})$ right m places, zero fill $\textcircled{3}$	0	0	X

# Optional Math Pac Instructions  $\textcircled{3}$  a,m,y must be even

\*See Expanded Memory Legend

OCTAL FORMAT	HEXIDECIMAL FORMAT	CODING FORMAT	INSTRUCTION	OPERATION	C	OV	CC
60 3 a m	C3 a m	LARD a,m	Literal Algebraic Right Double shift	Shift $(R_0, R_{2+1})$ right m places, sign fill $\textcircled{3}$	0	0	X
61 0 a m	C4 a m	LALS a,m	Literal Algebraic Left Shift	Shift $(R_0)$ left m places, zero fill	0	X	X
61 1 a m	C5 a m	LCLS a,m	Literal Circular Left Shift	Shift $(R_0)$ left circular m places	0	0	X
61 2 a m	C6 a m	LALD a,m	Literal Algebraic Left Double shift	Shift $(R_0, R_{2+1})$ left m places, zero fill $\textcircled{3}$	0	X	X
61 3 a m	C7 a m	LCLD a,m	Literal Circular Left Double shift	Shift $(R_0, R_{2+1})$ left circular m places $\textcircled{3}$	0	0	X
62 0 a m	C8 a m	LSU a,m	Literal Subtract	$(R_0) - (R_1)$	X	X	X
62 1 a m	C9 a m	LSU a,m	Literal Subtract Double	$(R_0, R_{2+1}) - m - R_0, R_{2+1} \text{ } \textcircled{3}$	X	X	X
62 2 a m	CA a m	LA a,m	Literal Add	$(R_0) + (R_1)$	X	X	X
62 3 a m	CB a m	LAD a,m	Literal Add Double	$(R_0, R_{2+1}) + m - R_0, R_{2+1} \text{ } \textcircled{3}$	X	X	X
63 0 a m	CC a m	LL a,m	Literal Load	$m \rightarrow R_0$	0	0	X
63 1 a m	CD a m	LC a,m	Literal Compare	$(R_0) - m$	X	X	X
63 2 a m	CE a m	LMUL a,m	Literal Multiply	$(R_{2+1}) \cdot m - R_0, R_{2+1} \text{ } \textcircled{3}$	0	0	X
63 3 a m	CF a m	LDIV a,m	Literal Divide	$(R_{2+1}) / (m - R_{2+1}); \text{ } \textcircled{3}$	0	X	X
64 3 a m	D3 a m	BSU a*,y,m	Byte-Shift	$(R_0) \cdot (Y) \text{ byte} \rightarrow R_0$	X	X	X
65 3 a m	D6 a m	BSA a*,y,m	Byte-Shift	$(R_0) \cdot (Y) \text{ byte} \rightarrow R_0$	X	X	X
66 3 a m	D8 a m	BCA a*,y,m	Byte Compare	$(R_0) \cdot (Y) \text{ byte}$	X	X	X
67 0 a m	DC a m	UM1 a,m	User Macro - CP	Reserved for User Macro	-	NC	
67 1 a m	DD a m	UM2 a,m	User Macro - CP	Reserved for User Macro	-	NC	
67 2 a m	DE a m	UMK a*,y,m	User Macro - CP	Reserved for User Macro	-	NC	
67 3 a m	DF a m	BCK a*,y,m	Byte Compare and Index By 1	$(R_0) \cdot (Y) \text{ byte}; (R_{m+1} + 1 - R_m)$	X	X	X

COMMAND/CHAIN INSTRUCTION

70 0 0 00	E0 0 0	ACR 0	Channel Control	Master clear all channels			
70 0 0 04	E0 0 4	ACR 4	Channel Control	Enable external interrupts, all channels			
70 0 0 05	E0 0 5	ACR 5	Channel Control	Disable external interrupts, all channels			
70 0 0 06	E0 0 6	ACR 6	Channel Control	Enable Class III, Priority 2, 3, 4 interrupts			
70 0 0 07	E0 0 7	ACR 7	Channel Control	Disable Class III, Priority 2, 3, 4 interrupts			
70 0 a 10	E0 a 8	CCR 10	Channel Control	Master clear chan a			
70 0 a 14	E0 a C	CCR 14	Channel Control	Enable chan a, external interrupts			
70 0 a 15	E0 a D	CCR 15	Channel Control	Disable chan a, external interrupts			
70 0 a 16	E0 a E	CCR 16	Channel Control	Enable chan a, Class III, Priority 2, 3, 4 interrupts			
70 0 a 17	E0 a F	CCR 17	Channel Control	Disable chan a, Class III, Priority 2, 3, 4 interrupts			
72 0 a m			User Macro - I/O	Reserved for User Macro			
72 1 a m			User Macro - I/O	Reserved for User Macro			

COMMAND INSTRUCTION

71 2 a 02	E6 a 2	ICK a,y	Initiate Input Chain	Y -> Channel a Chain Pointer; initiate input chain			
71 2 a 06	E6 a 6	OCK a,y	Initiate Output Chain	Y -> Channel a Chain Pointer; initiate output chain			
71 3 a m	E7 a m	WIM a*,y,m	Write Control Memory	(Y) -> Chan. a CM <sub>m</sub> ; See I/O Page 9			
72 3 a m	E8 a m	RIM a*,y,m	Read Control Memory	Chan. a (CM <sub>m</sub> ) -> Y See I/O Page 9			
76 0 a m	F8 a m	SICR a,m	Serial Interface Control Store Serial Status	Set or clear chan. a I/O discrete function			
76 3 a 00	F8 a m	SIS a,y	Serial Status	Clear a Serial Status Bits -> Y per Page 10			

CHAIN INSTRUCTION

70 3 00 00	E3 0 0	I0 0,y	Input Data	$(Y, Y+1) \rightarrow \text{BWC, BAP}; \text{initiate transfer}$			
70 3 01 00	E3 1 0	I0 1,y	Output Data	$(Y, Y+1) \rightarrow \text{BWC, BAP}; \text{initiate transfer}$			
70 3 02 00	E3 2 0	I0 2,y	External Function	$(Y, Y+1) \rightarrow \text{BWC, BAP}; \text{initiate transfer}$			
70 3 03 00	E3 3 0	I0 3,y	Force External Function	$(Y, Y+1) \rightarrow \text{BWC, BAP}; \text{initiate transfer}$			
71 2 00 00	E6 0 0	LDM m,y	Load Control Memory	$Y \rightarrow \text{CM}_m$ (See I/O Memory)			
71 3 00 00	E7 0 0	LCM m,y	Load Control Memory	$(Y) \rightarrow \text{CM}_m$ (See I/O Memory)			
72 3 00 00	E8 0 0	CCX a,y	Store Control Memory	$\text{CM}_m \rightarrow Y$ (See I/O Memory)			
73 0 00 00	EC 0 0	CHR a,m	Halt Chain	Halt chaining			
73 0 01 00	ED 1 0	IFR	Interrupt Processor	Generate chain interrupt			
73 3 00 00	EF 0 0	ZF y	Zero Flag	$0 \rightarrow Y, 15, 14$			
73 3 01 00	EF 1 0	SF y	Set Flag	$1 \rightarrow Y, 15, 14$			
74 2 00 00	F2 0 0	SJMC 0,y	Serial Jump on Met Condition	Unconditional Y -> CAP			
74 2 01 00	F2 1 0	SJMC 1,y	Serial Jump on Met Condition	If suppress flag not set, Y -> CAP			
74 2 02 00	F2 2 0	SJMC 2,y	Serial Jump on Met Condition	If monitor flag set, Y -> CAP			
75 0 00 00	F4 0 0	SSC m	Search For Sync	Perform functions assigned to bits per Page 10			
76 0 00 00	F8 0 0	CSIR m	Serial Interface Control Store Serial Status	Set or clear discrete function on bits per Page 10			
76 3 00 00	F8 0 0	CSST y	Serial Status	Serial Status Bits -> Y, See Page 10			

$\textcircled{3}$  a,m,y must be even

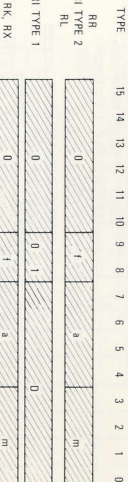
# TRIGONOMETRIC AND HYPERBOLIC FUNCTIONS  
(Operation Code 37)

X, Y Cartesian coordinate. Radix point assumed to be the same.  
 $\theta$  Angle of rotation. Trigonometric mode (RANS) Bit 15 = "180".  
 v Angle of rotation. Hyperbolic mode. Radix point assumed between bits 15 and 14.  
 K 0.468728  
 K<sub>1</sub> 1.152778  
 Note: 0 results are -1 LSB

o f a m	CODING FORMAT	FUNCTION	INPUT PARAMETERS			OUTPUT RESULTS		
			R <sub>a</sub>	R <sub>a+1</sub>	R <sub>a+2</sub>	Y → R <sub>a</sub>	X → R <sub>a+1</sub>	W → R <sub>a+2</sub>
37 0 a 00	VF a	Trigonometric vector	y	x	0	0	$X = \frac{R}{K} \sqrt{x^2 + y^2}$ $Y = \frac{y}{K}$	$W = \theta = \tan^{-1} \frac{y}{x}$
37 0 a 01	RF a	Trigonometric rotate	y	x	$\theta$	$Y = \frac{y \cos \theta + x \sin \theta}{K}$	$X = \frac{x \cos \theta - y \sin \theta}{K}$	0
37 0 a 02	VFP a	Trig. vector with prescale	y	x	0	0	$X = R \sqrt{x^2 + y^2}$ $Y = \frac{y}{K_1}$	$W = \theta = \tan^{-1} \frac{y}{x}$
37 0 a 03	RFP a	Trig. rotate with prescale	y	x	$\theta$	$Y = y \cos \theta + x \sin \theta$	$X = x \cos \theta - y \sin \theta$	0
37 0 a 04	VH a	Hyperbolic vector	y	x	0	0	$X = \sqrt{x^2 - y^2}$ $Y = \frac{y}{K_1}$	$W = v = \tanh^{-1} \frac{y}{x}$
37 0 a 05	RH a	Hyperbolic rotate	y	x	v	$Y = \frac{y \cosh v + x \sinh v}{K_1}$	$X = x \cosh v + y \sinh v$	0
37 0 a 06	VHP a	Hyp. vector with postscale	y	x	0	0	$X = \sqrt{x^2 - y^2}$ $Y = \frac{y}{K}$	$W = v = \tanh^{-1} \frac{y}{x}$
37 0 a 07	RHP a	Hyp. rotate with postscale	y	x	v	$Y = y \cosh v + x \sinh v$	$X = x \cosh v + y \sinh v$	0
37 0 a 01	RF a	Sin $\theta$ ; Cos $\theta$	0	0.468728	$\theta$	$Y = \sin \theta$	$X = \cos \theta$	0
37 0 a 03	RFP a	Sin $\theta$ ; Cos $\theta$	0	1	$\theta$	$Y = \sin \theta$	$X = \cos \theta$	0
37 0 a 01	RF a	Polar to Cartesian without prescale	0	R	$\theta$	$Y = \frac{R \sin \theta}{K}$	$X = \frac{R \cos \theta}{K}$	0
37 0 a 03	RFP a	Polar to Cartesian with prescale	0	R	$\theta$	$Y = R \sin \theta$	$X = R \cos \theta$	0
37 0 a 06	VHP a	Log <sub>e</sub> x	x-1	x+1	0	0	$2 \sqrt{x-1}$	$W = 1/2 \log_e x$ $= \tanh^{-1} \frac{x-1}{x+1}$
37 0 a 07	RHP a	Exponential	1	1	v	$Y = e^v = \cosh v + \sinh v$	$X = e^v = \cosh v + \sinh v$	0

# Optional Math Pac Instructions

INSTRUCTION WORD FORMAT



DEFINITION OF FIELDS

- 0 Operation (Function) Code
- 1 Format Designator
- 00 → Format RI, Register to Register or RL-1 Format
- 01 → Format RI, Register Indirect Memory or RL-2 Format
- 10 → Format RK, Register Literal Constant or RL-3 Format
- 11 → Format RX, Register Literal Constant or RL-4 Format
- a General Register or Subtraction Designator
- m General Register or Subtraction Designator
- 4 bit Unrepeated Literal Constant in RL Format
- D Signed Deviation Value (Two's Complement)
- Y Address of Arithmetic Constant

LEGEND

- B Bit pointer, 0 → Upper, 1 → Lower
- C Carry
- CC Condition Code
- W Word
- WV Vector Word
- J Designator Field in W
- x General Register Designator in RW1
- y Contents of Second Instruction Word
- Y Effective Operand Address or Constant
- Y\* Effective Operand Address in R<sub>m</sub>
- TM I/O Transfer Mode
- 00 - Abort Input Transfer
- 01 - Abort Input Transfer
- 10 - 16-bit Word Transfer
- 11 - 32-bit Dual Word Transfer

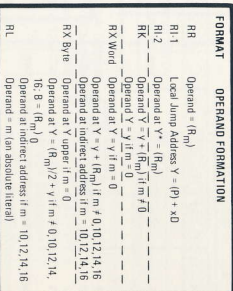
- BWC Buffer Word Count\*
- BAR Buffer Address Pointer
- WAV Vector Address Pointer
- CAP Chain Address Pointer
- RTC Real-Time Clock
- ( ) Contents of register or address
- F (R<sub>a</sub>) 5-0 AN/LYK-20
- U (R<sub>a</sub>) 13-8 AN/LYK-20
- C (R<sub>a</sub>) 1-6 AN/LYK-20A
- ∴ Compare
- ∴ 2's Complement

PAGE SETS

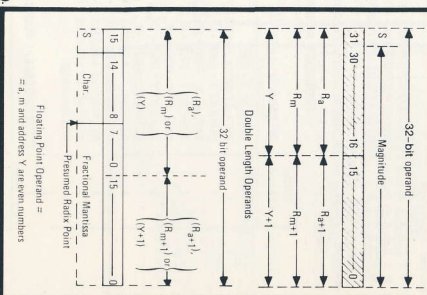
SR 1 Bits 5-4	Set 0
00 Page	Set 1
01 Page	Set 2
10 Page	Set 3
11 Page	Set 3

OR	XOR	AND
V10-1	X10-1	A10-1
V11-1	X11-1	A11-1
V11-0	X11-0	A11-0
V11-1	X11-1	A11-1
V11-0	X11-0	A11-0

\*NOTE: If BWC = zero (0000), indicates the maximum number of transfers (4096)

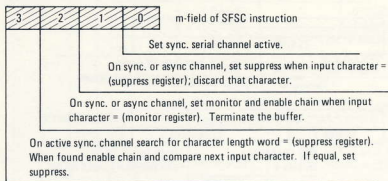


RL



\* = a in word address Y are even numbers



**FSFC OPERATION**


Bits 2 and 3 used for VACALES "Search for Sync"

**SERIAL CHANNEL INTERRUPT WORD FORMAT**

BITS	MIL-STD-188	RS-232	VACALES
0-7	ALWAYS ONES 1 → B DISCRETE TURNED ON	ALWAYS ONES 1 → RING INDICATOR ON	ALWAYS ONES 1 → B DISCRETE TURNED ON
9	1 → C DISCRETE TURNED OFF	1 → RECEIVED LINE SIGNAL DETECTOR OFF	1 → CARRIER DETECT TURNED OFF
10	1 → I DISCRETE TURNED ON	1 → I DISCRETE TURNED ON	1 → ALARM INDICATE TURNED ON
11	ALWAYS ONE	ALWAYS ONE	1 → SYNC ERROR TURNED ON
12	ALWAYS ONE	ALWAYS ONE	1 → TRANSMIT FULL ON TURNED OFF
13-15	ALWAYS ONES	ALWAYS ONES	ALWAYS ONES

**SERIAL I/O DISCRETE FUNCTIONS**

Octal m-Value	Function	MIL-STD-188C/VACALES			EIA-STD-RS232	
		Discrete	Line Designator (188C)	Line Designator (Vacaless)	Discrete	Line Designator
0	Set	Loop test (internal)	—	—	Loop test (internal)	—
1	Clear	Loop test (internal)	—	—	Loop test (internal)	—
2	NoOp	Net used	—	—	Spare	—
3	NoOp	Net used	—	—	Spare	—
4	Set	Control Line 6	J	J	J (non-std.)	—
5	Clear	Control Line 6	J	J	J (non-std.)	—
6	Set	Control Line 5	H	TRAN. PREP	Disable Ring Indicator	—
7	Clear	Control Line 5	H	TRAN. PREP	Interrupt (internal)	—
10	Clear	Control Line 4	G	G	Request to Send	CA
11	Set	Control Line 4	G	G	Request to Send	CA
12	Clear	Control Line 3	F	F	New Sync	—
13	Set	Control Line 3	F	F	New Sync	—
14	Clear	Control Line 2	D	D	Data Terminal Ready	CD
15	Set	Control Line 2	D	D	Data Terminal Ready	CD
16	Clear	Control Line 1	A	LOOP BACK	Loop Test (external)	—
17	Set	Control Line 1	A	LOOP BACK	Loop Test (external)	—

**SERIAL I/O STATUS INTERPRETATION**

Word Bit #	MIL-STD-188 Function	EIA-STD-RS232 Function	VACALES FUNCTION
2 <sup>0</sup>	Parity Error	Parity Error	—
2 <sup>1</sup>	Overrun	Overrun	Overrun
2 <sup>2</sup>	Break	Break	Parity Error
2 <sup>3</sup>	E Active	Clear to Send	Sync Error

**LIST OF NOMENCLATURED ITEMS**

UNIT NAME	DESIGNATION	PART NUMBER
CABINET, ELECTRICAL EQUIPMENT <sup>2</sup>	CY-7445A/UJK-20(V)	90536-7101970-12
CABINET, ELECTRICAL EQUIPMENT <sup>3</sup>	CY-7446A/UJK-20(XV)	90536-7101970-13
CABINET, ELECTRICAL EQUIPMENT <sup>1 3</sup>	CY-777 1/UJK-20(XV)	90536-7157853-09
CABINET, ELECTRICAL EQUIPMENT <sup>2</sup>	CY-7976/UJK-20A(V)	90536-7101970-14
CABINET, ELECTRICAL EQUIPMENT <sup>3</sup>	CY-7977/UJK-20A(XV)	90536-7101970-15
CONTROL-MONITOR <sup>2</sup>	C-9674A/UJK-20(V)	90536-7101985-10
CONTROL-MONITOR <sup>3</sup>	C-9675A/UJK-20(XV)	90536-7101985-09
CONTROL-MONITOR <sup>1 3</sup>	C-10633/UJK-20(XV)	90536-7157869-03
CONTROL-MONITOR <sup>2</sup>	C-9674A/UJK-20(V)	90536-7101985-08
POWER SUPPLY <sup>2</sup>	PP-7032(V)/UJK-20(V)	90536-7150350-02
POWER SUPPLY <sup>2</sup>	PP-7107(V)/UJK-20(V)	90536-7150355-02
POWER SUPPLY <sup>2</sup>	PP-7108(V)/UJK-20(V)	90536-7150351-03
POWER SUPPLY <sup>3</sup>	PP-7109(V)/UJK-20(XV)	90536-7150352-04
POWER SUPPLY <sup>3</sup>	PP-7110(V)/UJK-20(XV)	90536-7150354-04
POWER SUPPLY <sup>3</sup>	PP-7111(V)/UJK-20(XV)	90536-7150353-03
PROCESSOR-VERIFIER UNIT <sup>2</sup>	CP-1188B(V)/UJK-20(V)	90536-7128031-18
PROCESSOR-VERIFIER UNIT <sup>3</sup>	CP-1189B(V)/UJK-20(XV)	90536-7128031-19
PROCESSOR-VERIFIER UNIT <sup>2</sup>	CP-1512(P)/UJK-20A(V)	90536-7310550-00
PROCESSOR-VERIFIER UNIT <sup>3</sup>	CP-1513(P)/UJK-20A(XV)	90536-7310550-01
CORE MEMORY UNIT (8K)	MU-632/UJK-20(V)	90536-7128082-00
CORE MEMORY UNIT (32K)	MU-731(V)/UJK-20A(V)	90536-7310022-18
CORE MEMORY-CONTROL UNIT <sup>2</sup>	C-9531A(V)/UJK-20(V)	90536-7128029-20
CORE MEMORY-CONTROL UNIT <sup>3</sup>	C-9670A(V)/UJK-20(XV)	90536-7128029-21
CORE MEMORY-CONTROL UNIT <sup>2</sup>	C-9531A(V)/UJK-20(V)	90536-7128029-22
CORE MEMORY-CONTROL UNIT <sup>2</sup>	C-9670A(V)/UJK-20(XV)	90536-7128029-23
CORE MEMORY-CONTROL UNIT <sup>2</sup>	C-11087(V)/UJK-20A(V)	90536-7310014-08
CORE MEMORY-CONTROL UNIT <sup>3</sup>	C-11088(V)/UJK-20A(XV)	90536-7310014-09
INTERFACE KIT, FAST, SERIAL	MK-1720/UJK-20(V)	90536-7101802-08
INTERFACE KIT, SERIAL COMMUNICATION ASYNC/SYNC MIL-188C	MK-2051/UJK-20(V)	90536-7313567-02
INTERFACE KIT, SERIAL COMMUNICATION ASYNC/SYNC RS232	MK-2048/UJK-20(V)	90536-7313568-02
INTERFACE KIT, SLOW	MK-2097/UJK-20(V)	90536-7132194-04
INTERFACE KIT, FAST, NEGATIVE	MK-2098/UJK-20(V)	90536-7132195-04
INTERFACE KIT, FAST, POSITIVE	MK-2099/UJK-20(V)	90536-7132196-04
INTERFACE KIT, VARIABLE CHARACTER LENGTH, SERIAL, VACALES	MK-1806/UJK-20(V)	90536-7132198-03
INTERFACE KIT, SLOW PIC, DUAL	MK-2100/UJK-20(V)	90536-7132197-02
INTERFACE KIT, LOW LEVEL SERIAL	MK-2130/UJK-20(V)	90536-7320276-03
MAINTENANCE KIT, ELECTRONIC EQUIPMENT	MK-1958/UJK-20(V)	90536-7128073-01
REGISTER, COMPUTER, DUAL	MU-634/UJK-20(V)	90536-7150465-01
MEMORY KIT, READ (AVAILABLE BOOTSTRAP LISTINGS)	MK-1901(V)/UJK-20(V)	90536-7136820-00
ADAPTER KIT, EXTERNAL MOUNTING	MK-1959/UJK-20(V)	90536-7157900-00
ADAPTER KIT, EXTERNAL MOUNTING	MK-1960/UJK-20(V)	90536-7157900-01
OSCILLATOR, REAL TIME CLOCK MONITOR	O-1781(V)/UJK-20(V)	90536-7126200-02
OSCILLATOR, REAL TIME CLOCK MONITOR	O-1782/UJK-20(V)	90536-7137130-02
MOUNTING KIT, INTERNAL ADAPTER	MK-2308/UJK-20(V)	90536-7321442-00

1 Langley Rack 2 400 Hz 3 60 Hz

NOTE: For Micro Memory items, see page 12.



## LIST OF AN/UYK-20(V) MICROMEMORY ITEMS

NAME	DESIGNATION	PART NUMBER
PROGRAM KIT, MICROMEMORY BASIC/ NO MATH PAC	MK-1723(V)/UYK-20(V)	90536-7128071-04
PROGRAM KIT, MICROMEMORY BASIC/ MATH PAC	MK-1723(V)/UYK-20(V)	90536-7128071-05
MICROMEMORY UNIT, GROWTH, PROGRAM ONE	MU-791/UYK-20(V)	90536-7136291-01
MICROMEMORY UNIT, GROWTH, PROGRAM TWO	MU-792/UYK-20(V)	90536-7136905-01
MICROMEMORY UNIT, GROWTH, PROGRAM THREE	MU-793/UYK-20(V)	90536-7137070-01
MICROMEMORY UNIT, GROWTH, PROGRAM FOUR	MU-794/UYK-20(V)	90536-7133052-01
MICROMEMORY UNIT, STANDARD	MU-799/UYK-20(V)	90536-7125133-01

## LIST OF AN/UYK-20A(V) MICROMEMORY ITEMS

NAME	DESIGNATION	PART NUMBER
PROGRAM KIT, MICROMEMORY BASIC/ NO MATH PAC	MK-2134(V)/UYK-20A(V)	90536-7310548-00
PROGRAM KIT, MICROMEMORY BASIC/MATH PAC	MK-2134(V)/UYK-20A(V)	90536-7310548-01
MICROMEMORY UNIT, GROWTH, PROGRAM I	MU-795/UYK-20A(V)	90536-7310524-01
MICROMEMORY UNIT, GROWTH, PROGRAM II	MU-796/UYK-20A(V)	90536-7310526-01
MICROMEMORY UNIT, GROWTH, PROGRAM III	MU-797/UYK-20A(V)	90536-7310538-01
MICROMEMORY UNIT, GROWTH, PROGRAM IV	MU-798/UYK-20A(V)	90536-7315270-01
MICROMEMORY UNIT, STANDARD	MU-800/UYK-20A(V)	90536-7310522-01

## CURRENT LINE REPLACEABLE ASSEMBLIES

CARD	NAME	NSNs	LOCATION
90536-7092187-01	MICRO P REGISTER + DISPLAY	7010-01 084-8743	A03,04,05
90536-7092195-01	CONDITION REGISTER	7010-00-522-3450	B08
90536-7092201-01	REPEAT CONTROL + DISPLAY	7010-01-084-8742	A06
90536-7125129-01	MICRO MEMORY 0000-1777	7010-01-127-1757	B05*
90536-7125136-01	MICRO MEMORY 6000-7777	7010-00-522-3702	B02
90536-7125237-02	EMULATE CONTROL 1 & 2	TBD	C17*
90536-7125241-01	INST REG 0-7	7010-01-076-0613	C13
90536-7125276-01	MULTIPLY, DIVIDE, & MICRO CONTROL	7010-01-100-3316	B07
90536-7125290-01	SOURCE & DESTINATION TRANSLATOR	7010-00-522-3719	B15
90536-7125307-01	I/O CONTROL MEMORY	7010-01-075-5597	A20,21,22,23
90536-7125311-01	P, BKPT, MEMORY ADDRESS REG	7010-00-397-7808	C07,08
90536-7125380-01	STATUS REG 1 & 2 BITS 8-15	7010-00-522-3732	C15
90536-7125406-01	PAGE REGISTERS & CONTROL	7010-01-100-3317	C09*
90536-7125417-01	ALU CONTROL II & CONSOLE CONTROL	7010-00-578-2413	B09
90536-7125500-01	SHIFT MATRIX	7010-00-522-3735	A09,10
90536-7125926-01	PWR INTERRUPT, MASTER CLEAR	7010-00-522-3751	C22*
90536-7125980-01	I/O MODE & MATH PAC SELECT	7010-01-017-8793	C23*
90536-7126125-01	TWO BIT MULTIPLY	7010-00-522-3759	A07,08
90536-7126130-01	SHIFT MATRIX INPUT REGS.	7010-00-522-3760	A12
90536-7126156-01	MEMORY INTERFACE	7010-01-100-3318	C05,06
90536-7126160-01	RTC & MON CLK CONT, RESUME, DUAL CH	7010-00-522-3955	A14
90536-7126167-01	JUMP INTERRUPTS & INPUT ADDR	7010-01-084-8773	C19*
90536-7126172-01	I/O TRANSLATOR	7010-01-084-8785	B21
90536-7126175-01	I/O PRIORITY	7010-00-522-3987	B20
90536-7126181-01	I/O CONTROL, I/O TIMING	7010-00-522-4004	B18
90536-7126200-02	20 Mhz OSC 1 Khz CLOCK	7050-01-211-4670	B23
90536-7136266-01	ALU CONTROL	7010-01-100-3320	B10
90536-7136295-01	NDRO CONTROL PANEL INTERFACE	7010-01-006-6468	B06
90536-7136351-01	MICRO CONTROL 15	7010-01-100-3321	B17
90536-7150210-01	ARITHMETIC LOGIC UNIT	7010-01-140-7114	B11,12,13,14
90536-7150220-01	MEMORY CONTROL	7010-00-522-3749	C10*
90536-7150295-01	MASTER CLOCK, CONDITION REG	7010-00-522-3752	B16
90536-7150397-01	SHIFT MATRIX CONTROL	7010-01-053-4303	A13
90536-7150401-01	EMULATE CONTROL 3 & 4	7010-01-100-3323	C18
90536-7150405-01	TRANSLATOR CONTROL	7010-01-054-2891	B19
90536-7150415-01	STATUS REG 1 & 2 BITS 0-7	7010-01-050-1708	C16
90536-7150421-01	I/O INTERRUPT STORAGE	7010-01-100-3324	B22
90536-7150465-01	GENERAL REGISTERS (32)	5999-01-131-4654	C14
90536-7150475-01	I/O DATA DRIVE & MONITOR CLOCK	7010-01-100-3325	A19
90536-7150480-01	MICRO MEMORY SEL & MISC	7010-01-100-3326	A15

\*SEE PAGE 15 FOR AN/UYK-20A.

## CURRENT LINE REPLACEABLE ASSEMBLIES (continued)

CARD	NAME	NSNs	LOCATION
	<u>I/O Options</u>		
90536-7119380-01	-3V FAST TYPE I	7010-00-522-3519	
90536-7132152-03	-3V FAST TYPE III	7010-01-126-7298	
90536-7132154-03	-3V FAST TYPE II	7010-00-522-3526	
90536-7119395-01	-15V SLOW TYPE I	7010-00-522-3529	
90536-7132150-03	-15V SLOW TYPE II	7010-00-522-3532	
90536-7132146-13	-15V SLOW TYPE III	7010-01-130-0093	
90536-7119410-01	+3.5V ANEW TYPE I	7010-00-522-3546	
90536-7132156-03	+3.5V ANEW TYPE III	7010-00-522-3554	
90536-7132158-03	+3.5V ANEW TYPE II	7010-01-168-8386	
90536-7119432-02	NTDS SERIAL 2 CHAN RCVR	7010-01-228-3269	
90536-7312344-08	NTDS SERIAL 2 CHAN DRVR	7010-LL-HHB-8166	
90536-7132110-01	-15 VOLT SLOW PIC TYPE I	7010-01-037-9654	
90536-7132148-13	-15 VOLT SLOW PIC TYPE II	7010-01-171-4553	
90536-7132140-01	-15 VOLT SLOW PIC TYPE IA	7010-01-037-9655	
90536-7132121-03	VACALES TYPE III	7010-01-037-9658	
90536-7132126-01	VACALES TYPE IA	7010-01-150-4425	
90536-7132131-03	VACALES TYPE II	7010-01-150-4426	
90536-7132136-01	VACALES TYPE I	7010-01-037-9657	
90536-7312528-00	COMMON RS-232/188C RCVR	7010-01-166-3843	
90536-7312530-02	COMMON MIL-188C I/O DRVR	7010-01-222-2644	
90536-7312670-04	COMMON RS-232-C I/O DRVR	7010-01-167-2553	
90536-7316476-02	LOW LEVEL SERIAL TYPE I	7010-01-168-8576	
90536-7316478-07	LOW LEVEL SERIAL TYPE II	7010-01-168-8577	
	<u>CP OPTIONS</u>		
90536-7125175-01	INST REG 08-15, ECW w/MATH PAC	7010-00-522-3704	C12
90536-7126066-01	CORDIC EXTENSION w/MATH PAC	7010-01-017-8766	A16
90536-7138226-01	MULTIPLY CONTROL w/MATH PAC	7010-01-127-1758	A11
90536-7136291-01	MPG 1 MICROMEMORY 2000-3777	7010-01-084-8798	B04*
90536-7136905-01	MPG 2 MICROMEMORY 2000-3777	5999-01-179-0551	B04*
90536-7137000-01	MICROMEMORY 4000-5777 w/MATH PAC	7010-00-578-2303	B03
90536-7137070-01	MPG 3 MICROMEMORY 2000-3777	5999-01-178-8565	B04*
90536-7137130-02	20 MHz OSC, 32 KHz CLOCK	5895-01-104-7174	B23
90536-7313052-01	MPG 4 MICROMEMORY 2000-3777	5999-01-158-4757	B04*
90536-7125133-01	MICRO MEMORY 2000-3777 w/O MICRO GROWTH	7010-01-084-8787	B04*
90536-7125157-01	INST REG 08-15, ECW ROM w/O MATH PAC	7010-00-578-2302	C12
90536-7126142-01	MULTIPLY w/O MATH PAC	7010-01-127-1756	A11
	<u>CP CABLE ASSY.</u>		
90536-7101963-01	CABLE ASSY CP-TO MEM W3	7010-01-037-9651	C03
90536-7101966-01	CABLE ASSY CP-TO MEM W4	7010-01-037-9652	C04
90536-7133909-02	CABLE ASSY CP-MAINT PANEL W2	5995-01-099-2449	A02
90536-7133910-03	CABLE ASSY CP-MAINT PANEL W1	5995-01-101-5839	A01
90536-7134942-00	CABLE ASSY CP-MEM INT W6 DMA	7010-01-037-9653	C01
90536-7134998-00	CABLE ASSY CP-MEM INT W7 DMA	7010-01-026-8023	C02

\*SEE PAGE 15 FOR AN/UYK-20A.

## CURRENT LINE REPLACEABLE ASSEMBLIES (continued)

CARD	NAME	NSNs	LOCATION
	<u>LANGLEY RACK CP CABLE ASSY</u>		
90536-7101963-02	CABLE ASSY CP TO MEM W3	5995-01-101-5840	C03
90536-7101966-02	CABLE ASSY CP TO MEM W4	5995-01-101-5843	C04
90536-7133909-02	CABLE ASSY CP TO MAINT PNL W2	5995-01-099-2449	A02
90536-7133910-03	CABLE ASSY CP TO MAINT PNL W1	5995-01-101-5839	A01
90536-7134942-01	CABLE ASSY CP TO MEM W6 (DMA)	5995-01-062-6245	C01
90536-7134998-01	CABLE ASSY CP TO MEM W7 (DMA)	5995-01-062-6246	C02
	<u>MEMORY</u>		
90536-7128082-00	CORE ARRAY 8K	7010-01-016-0411	
90536-7150490-03	CONTROL w DMA	7010-00-525-1215	
90536-7134994-03	CONTROL w/o DMA	7010-01-084-8786	
90536-7150486-00	DATA w DMA	7010-01-066-7586	
90536-7101824-03	DATA w/o DMA	7010-01-084-8774	
	<u>EXPANDED MEMORY CP CARDS</u>		
90536-7310510-02	EMULATE CONTROL 1 & 2	7010-01-201-7389	C17
90536-7310512-01	I/O MODE & MATH PACK SEL	7010-01-201-7390	C23
90536-7310514-01	OC=40 JUMPS, INT'S, INPUT ADD REG	7010-01-201-7391	C19
90536-7310516-02	MEMORY CONTROL	5895-01-207-6600	C10
90536-7310518-01	PAGE REG'S & CONTROL	7010-01-201-7393	C09
90536-7310520-01	MICROMEMORY 0000-1777	7010-01-172-0807	B05
90536-7310522-01	MICROMEMORY 2000-3777	7010-01-181-3856	B04
90536-7310524-01	MPG 1 MICROMEMORY 2000-3777	7010-01-181-3857	B04
90536-7310526-01	MPG 2 MICROMEMORY 2000-3777	7010-01-172-9028	B04
90536-7310534-05	LOGIC CARD 1	7050-01-218-8963	C20
90536-7310536-03	POWER INT & MASTER CLEAR	7010-01-201-7395	C22
90536-7310538-01	MPG 3 MICROMEMORY 2000-3777	7010-01-172-5911	B04
90536-7315270-01	MPG 4 MICROMEMORY 2000-3777	7010-01-172-9029	B04
	<u>EXPANDED MEMORY CARDS</u>		
90536-7310022-18	CORE ARRAY 32K	7010-01-168-8593	
90536-7313550-13	DATA MOD	7010-01-167-2555	
90536-7312682-07	CONTROL CARD	7010-01-167-2554	
	<u>FAN ASSEMBLIES</u>		
90536-7309623-00	400 Hz STD CABINET	4140-01-181-8745	
90536-7309623-01	60 Hz STD CABINET	4140-01-130-0472	
90536-7310594-01	60 Hz CABINET (LANGLEY RACK)	7010-01-181-3307	
90536-7308013-00	400 Hz MEMORY	4140-01-008-2026	
90536-7308013-01	60 Hz MEMORY	4140-01-037-9620	
90536-7308028-00	400 Hz CP/IO	4140-01-034-7819	
90536-7308028-01	60 Hz CP/IO	4140-01-130-0471	
	<u>POWER SUPPLIES</u>		
90536-7150350-02	400 Hz, 115 VAC, 3 $\phi$	7010-01-016-0413	
90536-7150351-03	400 Hz, 115 VAC, 1 $\phi$	6130-01-130-8050	
90536-7150352-04	60 Hz, 115 VAC, 3 $\phi$	7010-01-125-2309	
90536-7150353-03	60 Hz, 115 VAC, 1 $\phi$	6130-01-129-5997	
90536-7150354-04	60 Hz, 208 VAC, 3 $\phi$	7010-01-164-9955	
90536-7150355-02	400 Hz, 208 VAC, 3 $\phi$	6130-01-130-8051	

7314639-01 CURRENT AN/UYK-20 PC CARD PLACEMENT MAP

30	TYPE I	I/O GROUP 0		30
31	TYPE II	(CHAN 6, 7, 8)		31
32	TYPE III			32
33	TYPE I	I/O GROUP 1		33
34	TYPE II	(CHAN 4, 5, 6, 7)		34
35	TYPE III			35
36	TYPE I	I/O GROUP 2		36
37	TYPE II	(CHAN 10, 11, 12, 13)		37
38	TYPE III			38
39	TYPE I	I/O GROUP 3		39
40	TYPE II	(CHAN 14, 15, 16, 17)		40
41	TYPE III			41
42	TYPE I	I/O GROUP 4		42
43	TYPE II	(CHAN 18, 19, 20, 21)		43
44	TYPE III			44
45	TYPE I	I/O GROUP 5		45
46	TYPE II	(CHAN 22, 23, 24, 25)		46
47	TYPE III			47
48	TYPE I	I/O GROUP 6		48
49	TYPE II	(CHAN 26, 27, 28, 29)		49
50	TYPE III			50
51	TYPE I	I/O GROUP 7		51
52	TYPE II	(CHAN 30, 31, 32, 33)		52
53	TYPE III			53
54	TYPE I	I/O GROUP 8		54
55	TYPE II	(CHAN 34, 35, 36, 37)		55
56	TYPE III			56
57	TYPE I	I/O GROUP 9		57
58	TYPE II	(CHAN 38, 39, 40, 41)		58
59	TYPE III			59
60	TYPE I	I/O GROUP 10		60
61	TYPE II	(CHAN 42, 43, 44, 45)		61
62	TYPE III			62
63	TYPE I	I/O GROUP 11		63
64	TYPE II	(CHAN 46, 47, 48, 49)		64
65	TYPE III			65
66	TYPE I	I/O GROUP 12		66
67	TYPE II	(CHAN 50, 51, 52, 53)		67
68	TYPE III			68
69	TYPE I	I/O GROUP 13		69
70	TYPE II	(CHAN 54, 55, 56, 57)		70
71	TYPE III			71
72	TYPE I	I/O GROUP 14		72
73	TYPE II	(CHAN 58, 59, 60, 61)		73
74	TYPE III			74
75	TYPE I	I/O GROUP 15		75
76	TYPE II	(CHAN 62, 63, 64, 65)		76
77	TYPE III			77
78	TYPE I	I/O GROUP 16		78
79	TYPE II	(CHAN 66, 67, 68, 69)		79
80	TYPE III			80
81	TYPE I	I/O GROUP 17		81
82	TYPE II	(CHAN 70, 71, 72, 73)		82
83	TYPE III			83
84	TYPE I	I/O GROUP 18		84
85	TYPE II	(CHAN 74, 75, 76, 77)		85
86	TYPE III			86
87	TYPE I	I/O GROUP 19		87
88	TYPE II	(CHAN 78, 79, 80, 81)		88
89	TYPE III			89
90	TYPE I	I/O GROUP 20		90
91	TYPE II	(CHAN 82, 83, 84, 85)		91
92	TYPE III			92
93	TYPE I	I/O GROUP 21		93
94	TYPE II	(CHAN 86, 87, 88, 89)		94
95	TYPE III			95
96	TYPE I	I/O GROUP 22		96
97	TYPE II	(CHAN 90, 91, 92, 93)		97
98	TYPE III			98
99	TYPE I	I/O GROUP 23		99
100	TYPE II	(CHAN 94, 95, 96, 97)		100
101	TYPE III			101
102	TYPE I	I/O GROUP 24		102
103	TYPE II	(CHAN 98, 99, 100, 101)		103
104	TYPE III			104
105	TYPE I	I/O GROUP 25		105
106	TYPE II	(CHAN 102, 103, 104, 105)		106
107	TYPE III			107
108	TYPE I	I/O GROUP 26		108
109	TYPE II	(CHAN 106, 107, 108, 109)		109
110	TYPE III			110
111	TYPE I	I/O GROUP 27		111
112	TYPE II	(CHAN 110, 111, 112, 113)		112
113	TYPE III			113
114	TYPE I	I/O GROUP 28		114
115	TYPE II	(CHAN 114, 115, 116, 117)		115
116	TYPE III			116
117	TYPE I	I/O GROUP 29		117
118	TYPE II	(CHAN 118, 119, 120, 121)		118
119	TYPE III			119
120	TYPE I	I/O GROUP 30		120
121	TYPE II	(CHAN 122, 123, 124, 125)		121
122	TYPE III			122
123	TYPE I	I/O GROUP 31		123
124	TYPE II	(CHAN 126, 127, 128, 129)		124
125	TYPE III			125
126	TYPE I	I/O GROUP 32		126
127	TYPE II	(CHAN 130, 131, 132, 133)		127
128	TYPE III			128
129	TYPE I	I/O GROUP 33		129
130	TYPE II	(CHAN 134, 135, 136, 137)		130
131	TYPE III			131
132	TYPE I	I/O GROUP 34		132
133	TYPE II	(CHAN 138, 139, 140, 141)		133
134	TYPE III			134
135	TYPE I	I/O GROUP 35		135
136	TYPE II	(CHAN 142, 143, 144, 145)		136
137	TYPE III			137
138	TYPE I	I/O GROUP 36		138
139	TYPE II	(CHAN 146, 147, 148, 149)		139
140	TYPE III			140
141	TYPE I	I/O GROUP 37		141
142	TYPE II	(CHAN 150, 151, 152, 153)		142
143	TYPE III			143
144	TYPE I	I/O GROUP 38		144
145	TYPE II	(CHAN 154, 155, 156, 157)		145
146	TYPE III			146
147	TYPE I	I/O GROUP 39		147
148	TYPE II	(CHAN 158, 159, 160, 161)		148
149	TYPE III			149
150	TYPE I	I/O GROUP 40		150
151	TYPE II	(CHAN 162, 163, 164, 165)		151
152	TYPE III			152
153	TYPE I	I/O GROUP 41		153
154	TYPE II	(CHAN 166, 167, 168, 169)		154
155	TYPE III			155
156	TYPE I	I/O GROUP 42		156
157	TYPE II	(CHAN 170, 171, 172, 173)		157
158	TYPE III			158
159	TYPE I	I/O GROUP 43		159
160	TYPE II	(CHAN 174, 175, 176, 177)		160
161	TYPE III			161
162	TYPE I	I/O GROUP 44		162
163	TYPE II	(CHAN 178, 179, 180, 181)		163
164	TYPE III			164
165	TYPE I	I/O GROUP 45		165
166	TYPE II	(CHAN 182, 183, 184, 185)		166
167	TYPE III			167
168	TYPE I	I/O GROUP 46		168
169	TYPE II	(CHAN 186, 187, 188, 189)		169
170	TYPE III			170
171	TYPE I	I/O GROUP 47		171
172	TYPE II	(CHAN 190, 191, 192, 193)		172
173	TYPE III			173
174	TYPE I	I/O GROUP 48		174
175	TYPE II	(CHAN 194, 195, 196, 197)		175
176	TYPE III			176
177	TYPE I	I/O GROUP 49		177
178	TYPE II	(CHAN 198, 199, 200, 201)		178
179	TYPE III			179
180	TYPE I	I/O GROUP 50		180
181	TYPE II	(CHAN 202, 203, 204, 205)		181
182	TYPE III			182
183	TYPE I	I/O GROUP 51		183
184	TYPE II	(CHAN 206, 207, 208, 209)		184
185	TYPE III			185
186	TYPE I	I/O GROUP 52		186
187	TYPE II	(CHAN 210, 211, 212, 213)		187
188	TYPE III			188
189	TYPE I	I/O GROUP 53		189
190	TYPE II	(CHAN 214, 215, 216, 217)		190
191	TYPE III			191
192	TYPE I	I/O GROUP 54		192
193	TYPE II	(CHAN 218, 219, 220, 221)		193
194	TYPE III			194
195	TYPE I	I/O GROUP 55		195
196	TYPE II	(CHAN 222, 223, 224, 225)		196
197	TYPE III			197
198	TYPE I	I/O GROUP 56		198
199	TYPE II	(CHAN 226, 227, 228, 229)		199
200	TYPE III			200
201	TYPE I	I/O GROUP 57		201
202	TYPE II	(CHAN 230, 231, 232, 233)		202
203	TYPE III			203
204	TYPE I	I/O GROUP 58		204
205	TYPE II	(CHAN 234, 235, 236, 237)		205
206	TYPE III			206
207	TYPE I	I/O GROUP 59		207
208	TYPE II	(CHAN 238, 239, 240, 241)		208
209	TYPE III			209
210	TYPE I	I/O GROUP 60		210
211	TYPE II	(CHAN 242, 243, 244, 245)		211
212	TYPE III			212
213	TYPE I	I/O GROUP 61		213
214	TYPE II	(CHAN 246, 247, 248, 249)		214
215	TYPE III			215
216	TYPE I	I/O GROUP 62		216
217	TYPE II	(CHAN 250, 251, 252, 253)		217
218	TYPE III			218
219	TYPE I	I/O GROUP 63		219
220	TYPE II	(CHAN 254, 255, 256, 257)		220
221	TYPE III			221
222	TYPE I	I/O GROUP 64		222
223	TYPE II	(CHAN 258, 259, 260, 261)		223
224	TYPE III			224
225	TYPE I	I/O GROUP 65		225
226	TYPE II	(CHAN 262, 263, 264, 265)		226
227	TYPE III			227
228	TYPE I	I/O GROUP 66		228
229	TYPE II	(CHAN 266, 267, 268, 269)		229
230	TYPE III			230
231	TYPE I	I/O GROUP 67		231
232	TYPE II	(CHAN 270, 271, 272, 273)		232
233	TYPE III			233
234	TYPE I	I/O GROUP 68		234
235	TYPE II	(CHAN 274, 275, 276, 277)		235
236	TYPE III			236
237	TYPE I	I/O GROUP 69		237
238	TYPE II	(CHAN 278, 279, 280, 281)		238
239	TYPE III			239
240	TYPE I	I/O GROUP 70		240
241	TYPE II	(CHAN 282, 283, 284, 285)		241
242	TYPE III			242
243	TYPE I	I/O GROUP 71		243
244	TYPE II	(CHAN 286, 287, 288, 289)		244
245	TYPE III			245
246	TYPE I	I/O GROUP 72		246
247	TYPE II	(CHAN 290, 291, 292, 293)		247
248	TYPE III			248
249	TYPE I	I/O GROUP 73		249
250	TYPE II	(CHAN 294, 295, 296, 297)		250
251	TYPE III			251
252	TYPE I	I/O GROUP 74		252
253	TYPE II	(CHAN 298, 299, 300, 301)		253
254	TYPE III			254
255	TYPE I	I/O GROUP 75		255
256	TYPE II	(CHAN 302, 303, 304, 305)		256
257	TYPE III			257
258	TYPE I	I/O GROUP 76		258
259	TYPE II	(CHAN 306, 307, 308, 309)		259
260	TYPE III			260
261	TYPE I	I/O GROUP 77		261
262	TYPE II	(CHAN 310, 311, 312, 313)		262
263	TYPE III			263
264	TYPE I	I/O GROUP 78		264
265	TYPE II	(CHAN 314, 315, 316, 317)		265
266	TYPE III			266
267	TYPE I	I/O GROUP 79		267
268	TYPE II	(CHAN 318, 319, 320, 321)		268
269	TYPE III			269
270	TYPE I	I/O GROUP 80		270
271				

7314638-01 CURRENT INPUT/OUTPUT PC CARD ASSEMBLIES

INTERCHANGE OPTIONS (4 CARD GROUPS)		TYPE			
FEATURE	MTF NO.	I	E	1A	III
MTS 15A SLOW	7312194*	7119395	7312152	7119395	7312146
MTS 30 FAST	7108653	7119395	7119655	7119395	7119641
MTS 15V SLOW	7312194*	7119395	7312154	7119395	7312152
MTS 30 FAST	7108654	7119395	7119390	7119390	7119395
MTS 15V SLOW	7312194*	7119410	7312158	7119410	7312156
MTS 30 FAST	7108654	7119410	7119420	7119410	7119415
PC MTS 15V SLOW	7312194*	7119410	7312148	7119410	7312146
PC MTS 30 FAST	7108654	7119410	7119410	7119410	7119410
MCABLES	7312198	7312131	7312128	7312128	7312121

CARD TYPE	CARD NO.	FUNCTION SELECT	JUMPER		DUMPER	
			MODE	MODE	MODE	MODE
MULTIBUS TYPE I	7312528	SYNC/ASYNC (00/00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14	
		SYNC/ASYNC (00/00)	SYNC (00)	ASYNC (00)	PNMS 13.6, 14	
		MULTIBUS 232C	RS-232C (85)	ASYNC (M)	PNMS 14.2	
		01 HILL	PNMS 8.6, 9	01 HILL (01)	PNMS 8.6, 9	
MULTIBUS TYPE E	7312530	SYNC/ASYNC (00/00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11	
		SYNC/ASYNC (00/00)	SYNC (00)	ASYNC (00)	PNMS 14.8, 11	
		01 HILL	PNMS 8.6, 9	01 HILL (01)	PNMS 8.6, 9	
		01 HILL	PNMS 14.2	01 HILL (01)	PNMS 14.2	
RS-232C TYPE E	7312670	SYNC/ASYNC (00/00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14	
		SYNC/ASYNC (00/00)	SYNC (00)	ASYNC (00)	PNMS 13.6, 14	
		01 HILL	PNMS 8.6, 9	01 HILL (01)	PNMS 8.6, 9	
		01 HILL	PNMS 14.2	01 HILL (01)	PNMS 14.2	

CARD TYPE		FUNCTION SELECT		MODE	
MULTIBUS TYPE I	7312528	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
MULTIBUS TYPE E	7312530	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11

CARD TYPE		FUNCTION SELECT		MODE	
MULTIBUS TYPE I	7312528	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
MULTIBUS TYPE E	7312530	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11

CARD TYPE		FUNCTION SELECT		MODE	
MULTIBUS TYPE I	7312528	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 13.6, 14
MULTIBUS TYPE E	7312530	ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11
		ASYNC (00)	ASYNC (00)	ASYNC (00)	PNMS 14.8, 11

EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

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RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

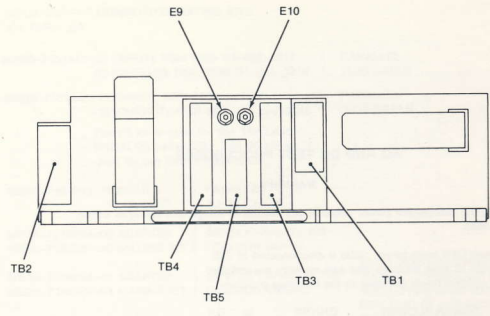
RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

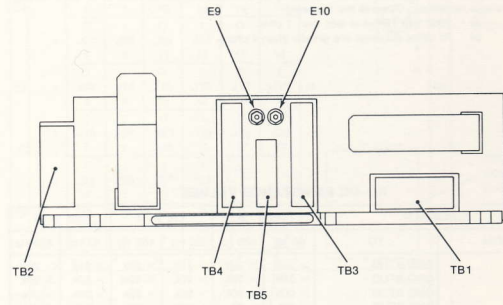
RECOMMENDED MTF - CARDS ARE INTERCHANGEABLE WITHIN FEATURE, KIT AND TYPE. EXAMPLE: 7312150 IS INTERCHANGEABLE WITH 7119405.

POWER SUPPLY DATA



FRONT

POWER SUPPLY CHASSIS FOR:  
 PP-7109(V)/UYK-20X(V) (60 HZ 115 VAC 3Φ) 90536-7150352-04, NSN 7010-01-125-2309  
 PP-7110(V)/UYK-20X(V) (60 HZ 208 VAC 3Φ) 90536-7150354-04, NSN 7010-01-164-9955



FRONT

POWER SUPPLY CHASSIS FOR:  
 PP-7032(V)/UYK-20(V) (400 HZ 115 VAC 3Φ) 90536-7150350-02, NSN 7010-01-016-0413  
 PP-7107(V)/UYK-20(V) (400 HZ 208 VAC 3Φ) 90536-7150355-02, NSN 6130-01-130-8051  
 PP-7108(V)/UYK-20(V) (400 HZ 115 VAC 1Φ) 90536-7150351-03, NSN 6130-01-130-8050  
 PP-7111(V)/UYK-20X(V) (60 HZ 115 VAC 1Φ) 90536-7150353-03, NSN 6130-01-129-5997

LOGIC VOLTAGES

OUTPUT POWER	VOLTAGE LIMITS (VDC)		LOAD CURRENT (AMPERES)		TESTPOINT
	MIN.	MAX.	MIN.	MAX.	
+5 VDC (CP/IOC)	4.8	5.4	30	42	PS1-E9
+5 VDC (MEMORY)	4.75	5.5	6	16	PS1-TB4-2
+15 VDC*	14.1	16.4	1	12	PS1-TB4-6
-5.2 VDC	-4.9	-5.6	2	10	PS1-TB5-1
+12 VDC	11.2	12.6	0	1	PS1-TB3-3
-16 VDC	-15	-16.8	0	3	PS1-TB3-5

Check all voltages between TP listed and E10.

\*The +15 volt regulator is temperature compensating and the +15 volt output will vary linearly with temperature from approximately 14.1 V at 60°C to 16.4 V at 0°C (for UYK-20A the range is 16.1 V at 60°C to 16.7 V at 0°C). Check all voltages between TP listed and E10.

## AC AND DC TEST PROCEDURES

### WARNING

**FAILURE TO disconnect power cable at J35 results in dangerous voltages within the cabinet.**

1. Ensure DPS main power cable is disconnected at J35.
2. Ensure all logic modules and 64K memory are installed.
3. Set Control Panel switches to the following positions:

POWER BLOWER	ON/OFF	to	ON
POWER LOGIC	ON/OFF	to	ON
CIRCUIT BREAKER	ON/OFF	to	ON
BATTLE SHORT	ON/OFF	to	ON

4. Using a VOM, observe reading as specified in the following table. Record all reading for future reference.
5. Using a VOM, measure from each power supply output voltage terminal to all other output voltage terminals. Observe the following:
  - a) TB3-1 to TB4-4 is less than 1 ohm.
  - b) All other readings are greater than 4 ohms.

### AC-DC RESISTANCE VALUES

TERMINALS		115 V 1#		115 V 3#		208 V 3#	
FROM	TO	60 Hz	400 Hz	60 Hz	400 Hz	60 Hz	400 Hz
J35-A	GND STUD	> 20k	> 20k	> 20k	> 20k	> 20k	> 20k
J35-B	GND STUD	> 20k	> 20k	> 20k	> 20k	> 20k	> 20k
J35-C	GND STUD	> 20k	> 20k	> 20k	> 20k	> 20k	> 20k
J35-D	GND STUD	> 20k	> 20k	> 20k	> 20k	> 20k	> 20k
J35-G	GND STUD	< 1	< 1	< 1	< 1	< 1	< 1
J35-A	J35-B	> 30	> 15	> 100	> 30	> 200	> 90
J35-A	J35-C	> 30	> 20k	> 50	> 20	> 200	> 100
J35-A	J35-D	> 20k	> 20k	> 20k	> 20k	> 100	> 50
J35-B	J35-C	< 1	> 20k	> 15k	> 60	> 200	> 90
J35-B	J35-D	> 20k	> 20k	> 20k	> 20k	> 80	> 30
J35-C	J35-D	> 20k	< 1	> 20k	> 20k	> 100	> 50
P.S. TB4-6	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB4-4	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB4-3	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB4-2	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. E09	P.S. E10	> 1	> 1	> 1	> 1	> 1	> 1
P.S. TB3-1	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB3-3	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB3-5	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB5-2	P.S. E10	> 2	> 2	> 2	> 2	> 2	> 2
P.S. TB4-5	P.S. E10	< 1	< 1	< 1	< 1	< 1	< 1
P.S. TB4-7	P.S. E10	< 1	< 1	< 1	< 1	< 1	< 1
P.S. TB5-3	P.S. E10	< 1	< 1	< 1	< 1	< 1	< 1
CPU TB1-6	MEM TB1-3	< 1	< 1	< 1	< 1	< 1	< 1
CPU TB1-7	MEM TB1-4	< 1	< 1	< 1	< 1	< 1	< 1
CPU TB1-6	P.S. TB2-2	< 1	< 1	< 1	< 1	< 1	< 1
CPU TB1-7	P.S. TB2-1	< 1	< 1	< 1	< 1	< 1	< 1

## I/O CONNECTOR PANEL

INPUT/OUTPUT CONNECTOR MATING KITS  
J01 THRU J32

90536-7101943-02 (INPUT), NSN 5935-01-023-1213 } PARALLEL  
-03 (OUTPUT), NSN 5935-01-023-1214 } 2U45 CABLE

90536-7101943-12 (INPUT), NSN 5935-01-108-3946 } PARALLEL  
-13 (OUTPUT), NSN 5935-01-108-3945 } 2U19 CABLE

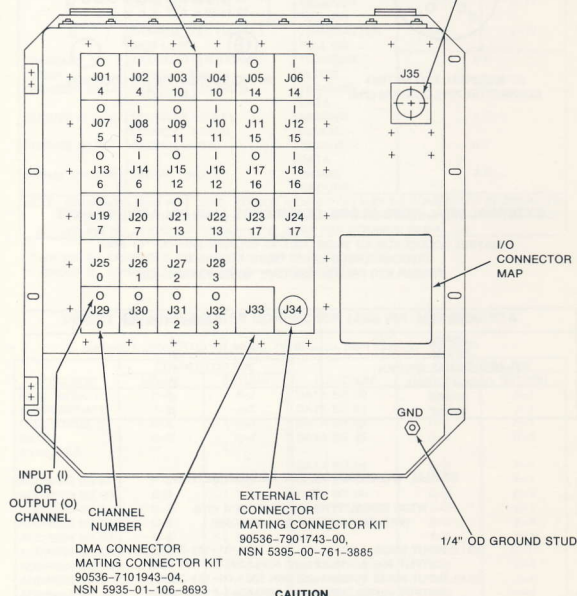
The 05 kit is used for the 188C and  
VACALES serial I/O. The 06 kit is  
used for the RS232 serial I/O.

90536-7101943-17 INPUT } PARALLEL  
-18 OUTPUT } 2U-30 CABLE

90536-7316994-00 ADAPTER } INPUT PARALLEL OR  
90536-7150267-00 MATING KIT } COMMON SERIAL

90536-7316994-01 ADAPTER } OUTPUT PARALLEL OR  
90536-7150267-01 MATING KIT } COMMON SERIAL

INPUT POWER CONNECTOR  
MATING CONNECTOR KITS  
90536-7150314-00 400 Hz,  
NSN 7010-01-100-3221  
90536-7150314-01 60 Hz,  
NSN 5935-01-106-1520

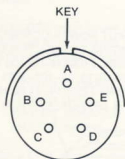


CONNECTOR CAPS WITH GASKETS MUST BE INSTALLED ON UNUSED CONNECTORS TO  
MAINTAIN RF/EMI INTEGRITY.

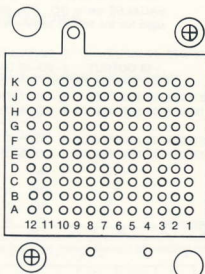
I/O CONNECTOR GASKET - P/N 90536-7101924-00, NSN 5999-01-160-7904  
CONNECTOR CAP KIT P/N 90536-7150304-00, NSN 7010-01-100-3220  
RTC CAP P/N 90536-7908845-00, NSN 0099-LL-MC2-2617

CABINET CONNECTORS (J1 THRU J33) ARE ASSEMBLED WITH INDIVIDUALLY REPLACEABLE PINS  
AND BUSHINGS THAT ARE FIELD REPAIRABLE. SEE TECHNICAL MANUAL FOR PROCEDURE.  
PIN/BUSHING P/N IS 90536-7902636-01, NSN 5940-00-516-1702  
PIN P/N IS 90536-7076100-02 NSN 5999-00-005-3847  
BUSHING P/N IS 90536-7050017-00 NSN 5999-00-003-8209

### RTC AND I/O CONNECTOR PIN LOCATION



A. EXTERNAL RTC MATING CONNECTOR PIN LOCATION (J34)



B. I/O CONNECTOR PIN LOCATION (J01-J33)

### EXTERNAL REAL-TIME CLOCK CONNECTOR (J34) PIN ASSIGNMENTS

(MATING CONNECTOR KIT 90536-7901743-00), NSN 5395-00-761-3885  
(RECOMMENDED CABLE 90536-7128045-00)  
(RFI/EMI RTC PROTECTIVE CAP: 90536-7908845-00)

FUNCTION	CONNECTOR PIN
SPARE	A
SPARE	B
CLOCK SIGNAL RETURN	C
CLOCK SIGNAL	D
SPARE	E
SPARE	F

### SERIAL CONNECTOR PIN ASSIGNMENTS

NTDS SERIAL TYPE D CONNECTOR KITS  
(WITHOUT MATING CONNECTORS)

RG11; INPUT 90536-7150391-00, NSN 5395-01-161-2976,  
OUTPUT 90536-7150391-01, NSN 5395-01-161-2977  
RG12; INPUT 90536-7150391-02, NSN 5395-01-161-2978,  
OUTPUT 90536-7150391-03, NSN 5395-01-161-2979

NATO SERIAL TYPE E LOW LEVEL CONNECTOR KITS  
(WITHOUT MATING CONNECTORS)

TRF8; INPUT 90536-7320185-00, OUTPUT 90536-7320185-01  
TRF58; INPUT 90536-7320185-00, OUTPUT 90536-7320185-01

SIGNAL	RETURN
B 08	A 08

### MIL-STD-188C, VACALES, AND RS-232C SERIAL CHANNEL I/O CONNECTOR PIN ASSIGNMENTS

MATING CONNECTOR KITS 90536-7101943-05, NSN 5395-01-090-4460, MIL-STD-188 AND VACALES, AND 90536-7101943-06, NSN 5395-01-171-3650, RS-232

NOTE: SERIAL I/O JUMPER PLUG 90536-7150233-00, NSN 5395-01-089-5459 REQUIRED FOR END-AROUND TESTING

MIL-STD-188C	FUNCTION		CONNECTOR PIN	
	RS-232C	VACALES	GROUP A*	GROUP B**
A	LOOP TEST	LOOP BACK	D-8	G-4
B	RING INDICATOR	B CARRIER	D-4	D-12
C	RECEIVED LINE SIGNAL DETECTOR	C DETECT	C-4	C-12
D	DATA TERMINAL READY	D	C-8	H-4
E	CLEAR TO SEND	SYNC ERROR	D-5	G-1
F	NEW SYNC.	F	D-7	G-3
G	REQUEST TO SEND	G	C-7	H-3
H	-	TRANSMITTER PREP	D-6	G-2
I	I (NOT USED)	ALARM INDICATE	D-3	D-11
J	J (NOT USED)	J	C-6	H-2
K	DATA SET READY	RECEIVER FULL ON	C-3	C-11
L	TRANSMITTER ON FULL (NOT USED)	TRANSMITTER FULL ON	D-2	D-10
TRANSMIT CLOCK	TRANSMITTER SIGNAL ELEMENT TIMING	TRANSMIT CLOCK		B-5
TRANSMIT DATA	TRANSMITTED DATA	TRANSMIT DATA		A-5
RECEIVE CLOCK	RECEIVER SIGNAL ELEMENT TIMING	DATA RECEIVE CLOCK		A-7
RECEIVE DATA	RECEIVED DATA	RECEIVE DATA		B-7
SIGNAL GROUND	SIGNAL GROUND	DATA SIGNAL GROUND		A-6

NOTE: REMAINING PINS NOT USED. GROUP A OR B PINS MAY BE CONNECTED INTERNAL TO THE CABLE CONNECTOR TO ALLOW ITS USE ON EITHER A OR B GROUPS. FUNCTION TO PIN RELATIONSHIP REMAINS THE SAME FOR COMMON SERIAL I/O.

\* GROUP A: CHANNELS 0,1; 4,5; 10,11; AND 14,15 (OCTAL)  
\*\* GROUP B: CHANNELS 2,3; 6,7; 12,13; AND 16,17 (OCTAL)

### DIRECT MEMORY ACCESS CONNECTOR (J33) PIN ASSIGNMENTS

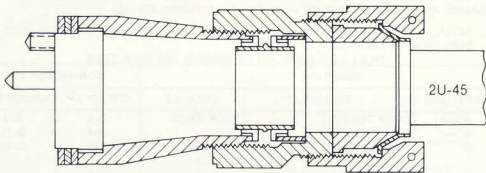
MATING CONNECTOR KIT 90536-7101943-04, NSN 5395-01-160-8693

FUNCTION	CONNECTOR PIN		CONNECTOR PIN	
	SIGNAL	RETURN	SIGNAL	RETURN
READ INITIATE	K-8	K-7	DATA BIT 00	K-2
WRITE INITIATE	J-8	J-7	DATA BIT 01	J-2
FULL CYCLE	H-8	H-7	DATA BIT 02	H-2
DATA AVAILABLE	G-8	G-7	DATA BIT 03	G-2
ADDRESS BIT 00	F-8	F-7	DATA BIT 04	F-2
ADDRESS BIT 01	E-8	E-7	DATA BIT 05	E-2
ADDRESS BIT 02	D-8	D-7	DATA BIT 06	D-2
ADDRESS BIT 03	C-8	C-7	DATA BIT 07	C-2
ADDRESS BIT 04	B-8	B-7	*ADDR BIT 16	B-5
ADDRESS BIT 05	A-8	A-7	ZWL	A-2
ADDRESS BIT 06	K-11	K-10	DATA BIT 08	C-12
ADDRESS BIT 07	J-11	J-10	DATA BIT 09	K-5
ADDRESS BIT 08	H-11	H-10	DATA BIT 10	J-5
ADDRESS BIT 09	G-11	G-10	DATA BIT 11	H-5
ADDRESS BIT 10	F-11	F-10	DATA BIT 12	G-5
ADDRESS BIT 11	E-11	E-10	DATA BIT 13	F-5
ADDRESS BIT 12	D-11	D-10	DATA BIT 14	E-5
ADDRESS BIT 13	C-11	C-10	DATA BIT 15	D-5
ADDRESS BIT 14	B-11	B-10	*ADDR BIT 17	C-5
ADDRESS BIT 15	A-11	A-10	ZWU	B-2
				A-5
				B-1
				A-4

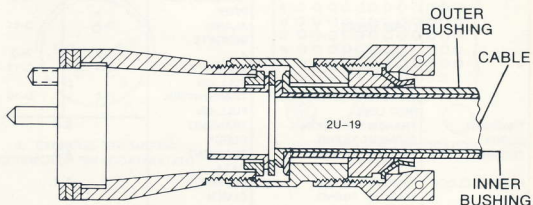
Note: Remaining pins not used.

\*AN/UUK-20A only

DPS I/O CONNECTORS



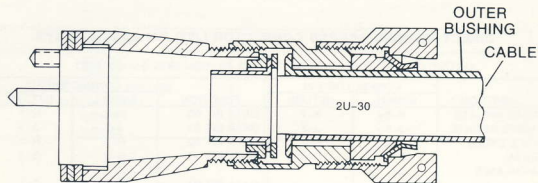
90536-7101943-02 (INPUT) NSN 5935-01-023-1213  
 90536-7101943-03 (OUTPUT) NSN 5935-01-023-1214  
 CONNECTOR STANDARD PARALLEL



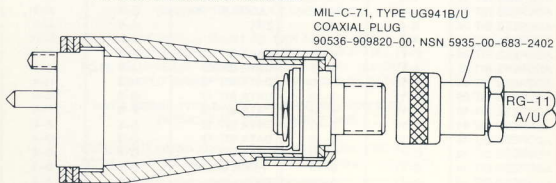
90536-7101943\*-12 (INPUT) NSN 5935-01-108-3946  
 90536-7101943\*-13 (OUTPUT) NSN 5935-01-108-3945  
 CONNECTOR STANDARD PARALLEL

\*SAME KIT IS USED FOR 8-BIT PARALLEL  
 USING 2U-19 CABLE AND BOTH BUSHINGS

THE MIL-STD-188C AND VACALES CONNECTOR KIT 90536-7101943-05, NSN 5935-01-090-4460  
 AND RS-232C CONNECTOR KIT 90536-7101943-06, NSN 5935-01-171-3650  
 ARE SIMILAR TO THE PARALLEL 2U-19 KITS AND CAN BE USED WITH ANY MULTIWIRED CABLE.



90536-7101943-17 (INPUT)  
 90536-7101943-18 (OUTPUT)  
 CONNECTOR STANDARD PARALLEL

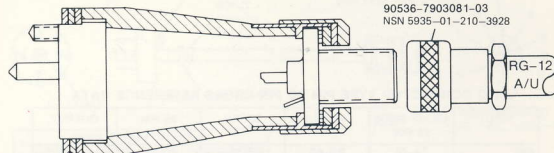


MIL-C-71, TYPE UG941B/U  
 COAXIAL PLUG  
 90536-909820-00, NSN 5935-00-683-2402

90536-7150391-00 (INPUT) NSN 5935-01-161-2976  
 90536-7150391-01 (OUTPUT) NSN 5935-01-161-2977  
 CONNECTOR STANDARD NTDS SERIAL (TYPE D) RG-12 CONFIGURATION

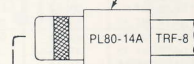
DPS I/O CABLES AND CONNECTORS

AMPHENOL P/N 53250-1000  
 COAXIAL PLUG  
 90536-7903081-03  
 NSN 5935-01-210-3928



90536-7150391-02 (INPUT) NSN 5935-01-161-2978  
 90536-7150391-03 (OUTPUT) NSN 5935-01-161-2979  
 CONNECTOR STANDARD NTDS SERIAL (TYPE D) RG-12 CONFIGURATION

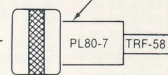
90536-7907634-00  
 NSN 5935-01-189-9261



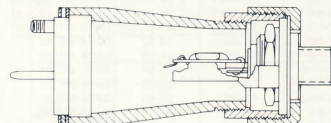
TRF-8 CONFIGURATION

OR

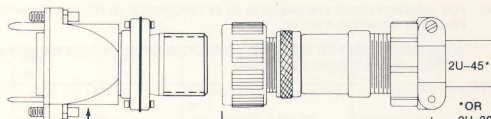
90536-7907634-01  
 NSN 5935-LL-TJ5-0572



TRF-58 CONFIGURATION



90536-7320185-00 (INPUT)  
 90536-7320185-01 (OUTPUT)  
 CONNECTOR STANDARD LLS (TYPE E) I/O

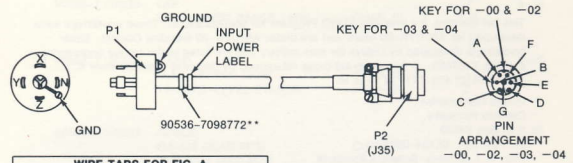


CONNECTOR SET  
 90536-7150267-00 (INPUT)  
 90536-7150267-01 (OUTPUT)

90536-7316994-00 INPUT  
 90536-7316994-01 OUTPUT  
 MIL-C-38999 SERIES III  
 CONNECTOR ADAPTER

\*OR  
 2U-30  
 2U-19

**POWER CONNECTOR DATA**



**I/O CONNECTOR TYPE PIN TO PIN CROSS REFERENCE DATA**

INPUT	MIL-C-38999 79 PIN	120 PIN	90 PIN	85 PIN	OUTPUT
IDR	79-78	B5-A5	1-11	1-6	ODA
IDA	77-76	B6-A6	2-12	2-7	ODR
EIR	75-74	B7-A7	3-13	3-8	EFA
EIA	73-72	B8-A8	4-14	4-9	EFR
DATA BIT 0	71-70	D1-C1	9-19	13-21	DATA BIT 0
DATA BIT 1	69-68	D2-C2	10-20	14-22	DATA BIT 1
DATA BIT 2	67-66	D3-C3	22-33	15-23	DATA BIT 2
DATA BIT 3	65-64	D4-C4	23-34	16-24	DATA BIT 3
DATA BIT 4	63-62	D5-C5	24-35	17-25	DATA BIT 4
DATA BIT 5	61-60	D6-C6	25-36	18-26	DATA BIT 5
DATA BIT 6	59-58	D7-C7	26-37	29-39	DATA BIT 6
DATA BIT 7	57-56	D8-C8	27-38	30-40	DATA BIT 7
DATA BIT 8	55-54	D9-C9	28-39	31-41	DATA BIT 8
DATA BIT 9	53-52	D10-C10	29-40	32-42	DATA BIT 9
DATA BIT 10	51-50	D11-C11	30-41	33-43	DATA BIT 10
DATA BIT 11	49-48	D12-C12	31-42	34-44	DATA BIT 11
DATA BIT 12	47-46	G1-H1	32-43	35-45	DATA BIT 12
DATA BIT 13	45-44	G2-H2	47-58	36-46	DATA BIT 13
DATA BIT 14	43-42	G3-H3	48-59	37-47	DATA BIT 14
DATA BIT 15	41-40	G4-H4	49-60	49-58	DATA BIT 15
DATA BIT 16	39-38	G5-H5	50-61	50-59	DATA BIT 16
DATA BIT 17	37-36	G6-H6	51-62	51-60	DATA BIT 17
DATA BIT 18	35-34	G7-H7	52-63	52-61	DATA BIT 18
DATA BIT 19	33-32	G8-H8	53-64	53-62	DATA BIT 19
DATA BIT 20	31-30	G9-H9	54-65	54-63	DATA BIT 20
DATA BIT 21	29-28	G10-H10	55-66	55-64	DATA BIT 21
DATA BIT 22	27-26	G11-H11	56-67	56-65	DATA BIT 22
DATA BIT 23	25-24	G12-H12	57-68	57-66	DATA BIT 23
DATA BIT 24	23-22	J1-K1	70-80	67-75	DATA BIT 24
DATA BIT 25	21-20	J2-K2	71-81	68-76	DATA BIT 25
DATA BIT 26	19-18	J3-K3	72-82	69-77	DATA BIT 26
DATA BIT 27	17-16	J4-K4	73-83	70-78	DATA BIT 27
DATA BIT 28	15-14	J5-K5	74-84	71-79	DATA BIT 28
DATA BIT 29	13-12	J6-K6	75-85	72-80	DATA BIT 29
DATA BIT 30	11-10	J7-K7	76-86	73-81	DATA BIT 30
DATA BIT 31	9-8	J8-K8	77-87	5-12	DATA BIT 31
DATA BIT 32		J9-K9	5-15	10-11	DATA BIT 32
DATA BIT 33		J10-K10	6-16	82-83	DATA BIT 33
DATA BIT 34		J11-K11	7-17	19-27	DATA BIT 34
DATA BIT 35		J12-K12	8-18	84-85	DATA BIT 35
SPARE	5-6	B2-A2	21-46	28-20	SPARE
SPARE	3-4	B3-A3	44-79	38-48	SPARE
SPARE	1-2	B4-A4			SPARE
SPARE		B9-A9			SPARE
SPARE		B10-A10			SPARE
SHIELD	7	B1	45-69	74	SHIELD

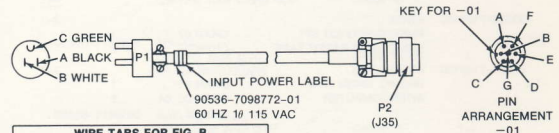
**NOTE:** FOR ARMORED CABLE THE SHIELD IS TO BE CONNECTED TO THE APPROPRIATE PIN IN THE CONNECTOR BLOCK.

IN COLUMNS LISTING PIN NUMBERS THE FIRST PIN LISTED CARRIES THE ACTIVE SIGNAL AND THE SECOND THE RETURN.

**WIRE TABS FOR FIG. A**

ORIGIN	WIRE COLOR	DESTINATION
P1-X	BLACK	P2-A
P1-Y	RED	P2-B
P1-Z	ORANGE	P2-C
P1-W	WHITE	P2-D
P1-GND	GREEN	P2-G

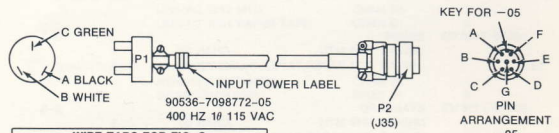
-00 400 HZ 3Ø 115 VAC  
-02 400 HZ 3Ø 208 VAC  
-03 60 HZ 3Ø 115 VAC  
-04 60 HZ 3Ø 208 VAC



**WIRE TABS FOR FIG. B**

ORIGIN	WIRE COLOR	DESTINATION
P1-A	BLACK	P2-A
P1-B	WHITE	P2-B
P1-C	GREEN	P2-G

90536-7098772-01  
60 HZ 1Ø 115 VAC



**WIRE TABS FOR FIG. C**

ORIGIN	WIRE COLOR	DESTINATION
P1-A	BLACK	P2-A
P1-B	WHITE	P2-B
P1-C	GREEN	P2-G

90536-7098772-05  
400 HZ 1Ø 115 VAC

**POWER CONNECTOR (J35) PIN ASSIGNMENTS:**  
**MATING CONNECTOR KITS:** 90536-7150314-00, 400 HZ; MS 3106R20-15S,  
NSN 7010-01-100-3221  
90536-7150314-01, 60 HZ; MS 3106R20-15SZ,  
NSN 5935-01-106-1520

PIN NO.	1 Ø	3 ØY (208V)	3 ØΔ
A	115 VAC	115 VAC LINE TO NEUTRAL (Ø A)	115 VAC LINE TO LINE (Ø A)
B	NEUTRAL (COMMON)	115 NEUTRAL LINE TO NEUTRAL (Ø B)	115 VAC LINE TO LINE (Ø B)
C	NOT USED	115 VAC LINE TO NEUTRAL (Ø C)	115 VAC LINE TO LINE (Ø C)
D	NOT USED	NEUTRAL (COMMON)	NOT USED
E	NOT USED	NOT USED	NOT USED
F	NOT USED	NOT USED	NOT USED
G	SAFETY GROUND	SAFETY GROUND	SAFETY GROUND



**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS**

This list contains the available NDRO Program Kit configurations. These bootstraps were developed for AN/UYK-20 users and are under AN/UYK-20 Baseline Control. Other bootstraps developed by Unisys for non-military use are listed under Unisys engineering drawing 7137880. A bootstrap list cross referenced by device is available from A. L. Edwins (612) 456-7411 or write to:

Unisys Corporation  
 Defense Products  
 P.O. Box 64525  
 St. Paul Mn. 55164-0525  
 Attn: A. L. Edwins Software Products  
 M.S. Y42B1.

BOOTSTRAPS DEVELOPED FOR AN/UYK-20(V) AND AN/UYK-20A(V) COMPUTERS

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

PART NUMBER	BOOT NAME DEVICE-1 NAME DEVICE-2 NAME	OCTAL CHAN NO	BOOT STRAP SWITCH	PX10563 SEC. NO.				
90536-7136220	CFP UNIVAC 1532 PAPER TAPE				CHAN 10	1-2		3-14
90536-7136230	GARD N.A.F.I. PAPER TAPE TT-187,5-LEVEL PTRPRDR				CHAN 10 CHAN 07	1 2		3-15
90536-7136235	ADSCS OJ-172 DEAC MTU KENNEDY 9000 MTU				CHAN 10 CHAN 11	1 2		3-30
90536-7136245	SSS(A) UNIVAC 1840M MTU UNIVAC 1532 PAPER TAPE				CHAN 16 CHAN 04	1 2		3-18
90536-7136250	SSS(B) KENNEDY 9000 MTU UNIVAC 1004 CARD RDR				CHAN 14 CHAN 15	1 2		3-32
90536-7136256	MK-48 UNIVAC 1544 MTU 601 CARD READER				CHAN 11-15 CHAN 06	1 2		3-35
90536-7136260	E.W. SUITE(A) UNISERVO VI-C MTU				CHAN 14	1-2		3-22
90536-7136270	PMO-403 UNIVAC 1544 MTU UNIVAC 610 CASSETTE				CHAN 10 CHAN 14	1 2		3-33
90536-7136275	SPS-48 UNIVAC 1243 MTU UNIVAC 1231 PAPER TAPE				CHAN 02 CHAN 01	1 2		3-25
90536-7136281	CLARINET MIRACLE KENNEDY 9000 MTU INTERCOMPUTER				CHAN 00 CHAN 04	1 2		3-21
90536-7136305	CDS-DN UNIVAC 1243 MTU UNIVAC 1231 PAPER TAPE				CHAN 02-06 CHAN 01	1 2		3-23
90536-7136310	CDS-SD UNIVAC 1540 MTU UNIVAC 1243 MTU				CHAN 13-17 CHAN 13-17	1 2		3-24
90536-7136315	E.W. SUITE(B) INTELLIGENT MEM DISK				CHAN 17	1-2		3-29
90536-7136320	DASS REMEM 6375 PAPER TAPE KENNEDY 2330 CARTRIDGE				CHAN 01 CHAN 02	1 2		3-36
90536-7136325	CMSGT CIPHER DATA PRO C-200 CASS. SINGER CL107MA-A DISK				CHAN 00 CHAN 04	1 2		3-37
90536-7136330	ICAD UNIVAC 1240 MTU CIPHER C-2000 CASSETTE				CHAN 04 CHAN 00	1 2		3-28

PART NUMBER	BOOT NAME DEVICE-1 NAME DEVICE-2 NAME	OCTAL CHAN NO	BOOT STRAP SWITCH	PX10563 SEC. NO.				
90536-7125150	EWDR PERTEC MTU 556 BPI REMEM 6375 PAPER TAPE	CHAN 07 CHAN 04	1 2	3-1				
90536-7136150	CVTSC UNIVAC 1840M MTU INTERCOMPUTER	CHAN 01 CHAN 00-04	1 2	3-2				
90536-7136155	SYS-1 UNIVAC 1540 MTU UNIVAC 1532 PAPER TAPE	CHAN 17 CHAN 16	1 2	3-3				
90536-7136160	IOIC UNIVAC 1540 MTU INTERCOMPUTER	CHAN 00 CHAN 03-07	1 2	3-4				
90536-7136165	ESMDE UNIVAC 1540 MTU UNIVAC 1532 PAPER TAPE	CHAN 01 CHAN 00	1 2	3-5				
90536-7136170	STANDARD UNIVAC 1540 MTU UNIVAC 1532 PAPER TAPE	CHAN 00 CHAN 01	1 2	3-6				
90536-7136186	SSIXS(A) CIPHER MARK I MTU SYSTEM INDUST. 3500-33 DISK	CHAN 15 CHAN 17	1 2	3-7				
90536-7136190	SSIXS(B) CIPHER DATA PRO. C-200 CASS. REMEM 6375 PAPER TAPE	CHAN 00 CHAN 01	1 2	3-8				
90536-7136195	OW-75(A) UNIVAC 1840M MTU UNIVAC 1538 PAPER TAPE	CHAN 03 CHAN 02	1 2	3-19				
90536-7136205	SAMAC KENNEDY 9000 MTU EECO PAPER TAPE	CHAN 11 CHAN 07	1 2	3-11				
90536-7136210	SSQ-72 DIGITRONICS 2540 PTR	CHAN 10	1-2	3-12				
90536-7136216	TPN22 KENNEDY 9000 MTU	CHAN 03	1-2	3-27				

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7136335	HWLS UNIVAC 610 CASSETTE UNIVAC 1532 PAPER TAPE	CHAN 14 CHAN 04	1 2	3-38
90536-7136355	CDSSD(A) UNIVAC 1540 MTU UNIVAC 1243 MTU	CHAN 13-17 CHAN 13-17	1 2	3-49
90536-7136360	MAGIS(A) UNIVAC 1840M MTU INTERCOMPUTER	CHAN 10 CHAN 13	1 2	3-40
90536-7136376	ESMSP UNIVAC 1532 PAPER TAPE UNIVAC 1540 MTU	CHAN 14 CHAN 15	1 2	3-42
90536-7136385	MK-68 MK-68 GFCS PTR	CHAN 03	1-2	3-39
90536-7136390	MK-48(B) UNIVAC 1544 MTU CDC 844 DISK	CHAN 11-15 CHAN 13-17	1 2	3-41
90536-7136396	SOSUS-1 CAELUS 206-2 DISK KENNEDY 9000 MTU	CHAN 17 CHAN 11	1 2	3-16
90536-7136400	SSSMP(A) UNIVAC 1532 PAPER TAPE KENNEDY 9000 MTU	CHAN 01 CHAN 11	1 2	3-13
90536-7136405	NSRDC TRI DATA 120 CARTRIDGE KENNEDY 9000 MTU	CHAN 10 CHAN 14	1 2	3-9
90536-7136410	SANGUINE(A) PERTEC MTU 800 BPI REMX RR-0302 PAPER	CHAN 00 CHAN 01	1 2	3-10
90536-7136417	NAVMACS UNIVAC 1532 PAPER TAPE UNIVAC CARTRIDGE MCTS	CHAN 15 CHAN 16	1 2	3-20
90536-7136420	LAMPS MOHAWK DATA SCI 2021 CART. UNIVAC 1540 MTU	CHAN 04 CHAN 12	1 2	3-31
90536-7136425	STMA UNIVAC 1870 CASSETTE KENNEDY 9000 MTU	CHAN 04 CHAN 14	1 2	3-44
90536-7136430	ISABPS TT/187 PAPER TAPE READER SYSTEM INDUSTRIES 3500 DISK	CHAN 07 CHAN 17	1 2	3-47
90536-7136435	SRD-19 UNIVAC 1870 CASSETTE	CHAN 04	1-2	3-46
90536-7136440	SANGUINE(B) AN/UGC-48A PAPER TAPE KENNEDY 2330 CARTRIDGE	CHAN 10 CHAN 05	1 2	3-43

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7136445	SANGUINE(C) KENNEDY 9000 MTU KENNEDY 2330 CARTRIDGE	CHAN 00 CHAN 05	1 2	3-26
90536-7136450	PAIR UNIVAC 1840M MTU UNIVAC 1532 PAPER TAPE	CHAN 00 CHAN 01	1 2	3-45
90536-7136455	WSC-2 NAVY ANTENNA CONTROL	CHAN --	1-2	3-53
90536-7136460	DDR UNIVAC DDR MTU READ/WRITE FILE	CHAN 00	1	3-50
90536-7136465	CMTU AN/USH-26 CMTU	CHAN 00	1	3-48
90536-7136475	SSES UNIVAC 1840M MTU TT-187 PAPER TAPE	CHAN 00 CHAN 07	1 2	3-34
90536-7136480	MK86 UNIVAC 1540 MTU UNIVAC 1532 PAPER TAPE	CHAN 00 CHAN 10	1 2	3-54
90536-7136490	CLASSIC CALIPER(B) DDC 7310 DISK AN/USH-26 CMTU	CHAN 04 CHAN 14	1 2	3-99
90536-7136500	SSES(B) KENNEDY 9000 MTU UNIVAC 1532 PAPER TAPE	CHAN 14 CHAN 04	1 2	3-17
90536-7136506	TRIDENT INTERCOMPUTER INTERCOMPUTER	CHAN 00 CHAN 01	1 2	3-51
90536-7136510	TRIDENT(B) INTERCOMPUTER OJ-172 DEAC MTU	CHAN 00 CHAN 02	1 2	3-63
90536-7136515	SEAFARER(A) AN/USH-26 CMTU KENNEDY 9000 MTU	CHAN 05 CHAN 00	1 2	3-56
90536-7136520	SEAFARER(B) AN/USH-26 CMTU UNIVAC 1532 PAPER TAPE	CHAN 05 CHAN 00	1 2	3-52
90536-7136527	ITAOC UNIVAC 1840M MTU PERTEC FLOPPY DISK	CHAN 03 CHAN 03	1 2	3-95
90536-7136531	ITBOIP UNIVAC 1232A PAPER TAPE UNIVAC 1540 MTU	CHAN 17 CHAN 12-16	1 2	3-72
90536-7136535	NTDS UNIVAC 1540 MTU UNIVAC 1231 PAPER TAPE	CHAN 03-07 CHAN 01	1 2	3-55

AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)

90536-7136540	ATLTP4 CIPHER C-2000 CASSETTE KENNEDY 9000 MTU	CHAN 16 CHAN 00	1 2	3-60
90536-7136545	ATLTP4(B) CIPHER DATA PRO C-200 CART. SINGER CL107MA-A DISK	CHAN 16 CHAN 17	1 2	3-68
90536-7136550	IRR UNISERVO VI-C MTU	CHAN 13	1-2	3-64
90536-7136555	IRR(B) SINGER CL107MA-A DISK POTTER MTU	CHAN 16 CHAN 14	1 2	3-75
90536-7136560	SOSUS-2 AN/USH-26 CMTU	CHAN 12	1	3-57
90536-7136566	SOSUS-3 AN/USH-26 CMTU INTERCOMPUTER	CHAN 00 CHAN 04	1 2	3-62
90536-7136570	SOSUS-4 AN/USH-26 CMTU SYSTEM INDUSTRIES 9500	CHAN 12 CHAN 11-15	1 2	3-61
90536-7136575	SURTASS UNIVAC 1870 CASSETTE SINGER LIBRASCOPE	CHAN 07 CHAN 17	1 2	3-81
90536-7136581	NTDS(B) UNIVAC 1243 MTU UNIVAC 1231 PAPER TAPE	CHAN 03-07 CHAN 01	1 2	3-69
90536-7136588	NAVMACS(B) AN/USH-26 CMTU RD-397 PAPER TAPE	CHAN 00 CHAN 01	1 2	3-59
90536-7136592	GYBFJP5 UNIVAC 1870 PAPER TAPE UNIVAC 1870 CASSETTE	CHAN 06 CHAN 06	1 2	3-77
90536-7136595	SQR-XX(B) AN/USH-26 CMTU KENNEDY 9000 MTU	CHAN 01 CHAN 14	1 2	3-58
90536-7136625	SQR-XX WANGCO DISK KENNEDY 9000 MTU	CHAN 17 CHAN 14	1 2	3-66
90536-7136631	SURTASS(B) UNIVAC 1870 CASSETTE SYSTEM INDUSTRIES 9500	CHAN 07 CHAN 11-15	1 2	3-74
90536-7136636	S58FC1G AN/USH-26 CMTU UNIVAC 1540 MTU	CHAN 17 CHAN 16	1 2	3-65
90536-7136640	JALBFPS REMX 6375 PAPER TAPE KENNEDY 9000 MTU	CHAN 00 CHAN 04	1 2	3-67

AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)

90536-7136650	SPS-48(B) OJ-172 DEAC PAPER TAPE OJ-172 DEAC MTU	CHAN 02-06 CHAN 02-06	1 2	3-70
90536-7136656	SPS-48(C) UNIVAC 1231 PAPER TAPE UNIVAC 1840M MTU	CHAN 01 CHAN 02-06	1 2	3-71
90536-7136663	PDTS AN/USH-26 CMTU UNIVAC 1240 MTU	CHAN 03 CHAN 07	1 2	3-73
90536-7136667	MK23TAS AN/USH-26 CMTU KENNEDY 9000 MTU	CHAN 01 CHAN 00	1 2	3-78
90536-7136675	TSCT WANGCO DISK KENNEDY 9000 MTU	CHAN 17 CHAN 13	1 2	3-76
90536-7136685	AEGIS UNIVAC 1840M MTU INTERCOMPUTER	CHAN 10 CHAN 01-05	1 2	3-82
90536-7136690	TFCC UNIVAC 1840 MTU IBM RD-281 DISK	CHAN 01 CHAN 00	1 2	3-133
90536-7136825	SPS-48(D) UNIVAC 1243 MTU UNIVAC 1231 PAPER TAPE	CHAN 02-06 CHAN 01	1 2	3-85
90536-7136830	AEGIS(B) AN/USH-26 CMTU	CHAN 05	1	3-84
90536-7136835	LAMPS(A) OJ-172 DEAC MTU UNIVAC 1840M MTU	CHAN 02-06 CHAN 03-07	1 2	3-86
90536-7136841	JALBEA UNIVAC 1870 PAPER TAPE UNIVAC 1870 CASSETTE	CHAN 00 CHAN 00	1 2	3-83
90536-7136846	PLRS UNISERVO VI-C MTU AN/USH-26 CMTU	CHAN 00 CHAN 06	1 2	3-97
90536-7136851	SSSMPI(B) AN/USH-26 CMTU SINGER LIBRASCOPE	CHAN 01 CHAN 17	1 2	3-88
90536-7136855	ATLTP4(C) WANGCO DISC KENNEDY 9000 MTU	CHAN 10 CHAN 00	1 2	3-87
90536-7136860	NCSL-CME CIPHER MTU DDC M6200-128 DISK	CHAN 00 CHAN 01	1 2	3-93
90536-7136865	IRR(C) UNIVAC 1540 MTU UNIVAC 1532 PAPER TAPE	CHAN 00 CHAN 16	1 2	3-90

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7136870	IRR(D) UNISERVO VI-C MTU SINGER CL107MA DISK	CHAN 13 CHAN 17	1 2	3-92
90536-7136876	ISABPS(B) TT/187 PAPER TAPE READER SYSTEM INDUSTRIES 3500 DISK	CHAN 01 CHAN 17	1 2	3-89
90536-7136880	MAGIS(C) UNIVAC 1840M MTU INTERCOMPUTER	CHAN 04 CHAN 07	1 2	3-105
90536-7136888	NAVMACS(C) AN/USH-26 CMTU RD-397 PAPER TAPE	CHAN 16 CHAN 15	1 2	3-91
90536-7136891	TACINTEL AN/USH-26 CMTU SYSTEM INDUSTRIES 3500 DISK	CHAN 00 CHAN 17	1 2	3-94
90536-7136896	OUTBOARD AN/USH-26 CMTU INTERCOMPUTER	CHAN 14 CHAN 02	1 2	3-96
90536-7136900	CCIS UNIVAC 1532 PAPER TAPE UNIVAC 610 CASSETTE	CHAN 00 CHAN 05	1 2	3-98
90536-7136915	SQR-19 AN/USH-26 CMTU IBM RASS DISK (AN/UYPH-7(V))	CHAN 01 CHAN 17	1 2	3-134
90536-7136920	AEGIS(C) AN/USH-26 CMTU UNIVAC 1840M MTU	CHAN 10 CHAN 14	1 2	3-120
90536-7136925	MK-68(B) UNIVAC 1840M MTU SPERRY GYRO PAPER TAPE	CHAN 00 CHAN 13	1 2	3-101
90536-7136930	SURTASS(C) KENNEDY 9000 MTU SYSTEM INDUSTRIES 9500 DISK	CHAN 07 CHAN 13-17	1 2	3-100
90536-7136935	AEGIS(D) UNIVAC 1840M MTU CDC 9762 DISK	CHAN 07 CHAN 13-17	1 2	3-104
90536-7136941	SPS-48(E) AN/USH-26 DRIVE 0 AN/USH-26 DRIVE 1	CHAN 01 CHAN 01	1 2	3-80
90536-7136946	COMDAC AN/USH-26 CMTU CL107MB SINGER DISK	CHAN 10 CHAN 11	1 2	3-102
90536-7136952	LAMPS(B) AN/USH-26 DRIVE 0 AN/USH-26 DRIVE 1 1540 MTU (SELECTED FROM M. PANEL)	CHAN 01 CHAN 01 CHAN 16	1 2 1-2	3-106

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7136955	PDT(S)(B) UNIVAC 1243 MTU AN/USH-26 CMTU	CHAN 03-07 CHAN 01	1 2	3-103
90536-7136960	SEAFARER(C) KENNEDY 9000 MTU AN/USH-26 CMTU	CHAN 00 CHAN 11	1 2	3-108
90536-7136965	SEAFARER(D) AN/USH-26 CMTU CL107MA SINGER DISK	CHAN 04 CHAN 07	1 2	3-130
90536-7136970	RAPLOC UNIVAC 610 CASSETTE KENNEDY 9000 MTU	CHAN 00 CHAN 13	1 2	3-109
90536-7136975	ISPE AN/USH-26 CMTU SONAR DATA BUFFER	CHAN 17 CHAN 16	1 2	3-107
90536-7136980	RAPLOC(A) UNIVAC 1840M MTU INTERCOMPUTER	CHAN 03-07 CHAN 00-04	1 2	3-131
90536-7137025	TYQ AN/USH-26 CMTU PERTEC FLOPPY DISC	CHAN 03 CHAN 03	1 2	3-112
90536-7137035	AEGIS(E) AN/USH-26 CMTU UNIVAC 1840M MTU	CHAN 03 CHAN 07	1 2	3-119
90536-7137045	LINK-11 AN/USH-26 CMTU OJ-172 DEAC MTU	CHAN 01 CHAN 03-07	1 2	3-115
90536-7137055	NIPS UNIVAC 1840M MTU UNIVAC 1532 PAPER TAPE	CHAN 06 CHAN 12	1 2	3-121
90536-7313450	AEGIS(F) AN/USH-26 CMTU UNIVAC 1532 PAPER TAPE	CHAN 16 CHAN 00	1 2	3-110
90536-7313455	CANADA(B) AN/USH-26 CMTU REMEX 6375 PAPER TAPE	CHAN 10 CHAN 12	1 2	3-111
90536-7313598	TARTAR OJ-172 DEAC MTU OJ-172 DEAC PAPER TAPE	CHAN 17 CHAN 17	1 2	3-117
90536-7313603	SYS-1(B) AN/USH-26 CMTU UNIVAC 1545 DISK	CHAN 17 CHAN 07	1 2	3-126
90536-7313608	SYS-CG AN/USH-26 CMTU PDP-11/70 MTU	CHAN 01 CHAN 00	1 2	3-116

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7313613	CVNS			3-114
	UNIVAC 1540 MTU	CHAN 10	1	
	UNIVAC 1532 PAPER TAPE	CHAN 00	2	
90536-7313618	SYS-1(A)			3-113
	AN/USH-26 CMTU	CHAN 17	1	
	KENNEDY 9000 MTU	CHAN 16	2	
90536-7315663	VLS			3-118
	AN/USH-26 CMTU	CHAN 01	1	
	UNIVAC 1532 PAPER TAPE	CHAN 04	2	
90536-7315840	SEANYMPH			3-122
	GENISCO MD CLR-20 MTU	CHAN 13	1	
	DDC MDMS-20 6300 DISK	CHAN 17	2	
90536-7317896	NAVMACS(D)			3-124
	RD-433 DISK UNIT	CHAN 16	1	
	INTERCOMPUTER	CHAN 14	2	
90536-7317902	NAVMACS(E)			3-125
	AN/USH-26 CMTU	CHAN 16	1	
	INTERCOMPUTER	CHAN 14	2	
90536-7319748	SNSNTIF			3-128
	AN/USH-26 CMTU	CHAN 01	1	
	OJ-172 DEAC MTU	CHAN 03-07	2	
90536-7320706	CVNS(A)			3-129
	AN/USH-26 CMTU	CHAN 10	1	
	UNIVAC 1532 PTP RDR	CHAN 15	2	
90536-7321211	SURTASS(D)			3-127
	AN/UYY-3 DISK	CHAN 13	1	
	AN/USH-26 CMTU	CHAN 14	2	
90536-7321935	MAPS			3-145
	AN/USH-26 CMTU	CHAN 00	1	
	MICROPOLIS DISK	CHAN 15	2	
90536-7321986	OUTBOARD(A) EM*			3-146
	AN/UYY-7(V) DISK EM	CHAN 15	1	
	AN/UYY-7(V) DISK EM	CHAN 07	2	
	AN/USH-26 CMTU EM	CHAN 03		
90536-7322652	CCSC			3-151
	AN/USH-26 CMTU	CHAN 00	1	
	UNIVAC 1545 DISK	CHAN 17	2	
90536-7322814	IRR (E)			3-152
	CL107MA DISK UNIT	CHAN 17,16	1	
	AN/USH-26 CMTU	CHAN 14	2	
90536-7323578	MK-68(C)			3-158
	UNIVAC 1840M MTU	CHAN 00	1	
	RAYMOND 6415 CART.	CHAN 05	2	

\* All bootstraps identified with an EM (Expanded Memory) were designed for the AN/UYYK-20A computers. All bootstraps will run on either an expanded memory DPS or a DPS without expanded memory (within their limitations).

**AVAILABLE NDRO PROGRAM KIT CONFIGURATIONS (continued)**

90536-7323584	NAVMACS(F) REV A			3-153
	RD-433 DISK UNIT	CHAN 16,17	1	
	INTERCOMPUTER	CHAN 14,15	2	
90536-7323874	NAVMACS (G) REV A			3-154
	INTERCOMPUTER	CHAN 14	1	
	AN/USH-26 CMTU	CHAN 16	2	
90536-7324696	TARTAR (A) EM*			3-159
	UNIVAC 1870 CASSETTE EM	CHAN 00	1	
	AN/USH-26 CMTU EM	CHAN 02	2	
	UNIVAC 1870 PTP RDR EM	CHAN 00		FROM M.P.
90536-7324757	IRR (F)			3-160
	CL107MA DISK UNIT	CHAN 17,16	1	
	AN/USH-26 CMTU	CHAN 14	2	
90356-7327092	B20F15			3-165
	AN/USH-26 CMTU	CHAN 03	1	
	RD-358 (U1840M) MTU	CHAN 13-17	2	
90536-7327704	NAVMACS (H)			3-167
	AN/USH-26 CMTU	CHAN 01	1	
	RD-358 (U1840M) MTU	CHAN 12-16	2	
90536-7330301	RANDDG			3-166
	AN/USH-26 CMTU	CHAN 01	1	
	OJ-172 DEAC MTU	CHAN 16	2	
90536-7330302	SQR19AA			3-123
	AN/USH-26 CMTU	CHAN 01	1	
	INTERCOMPUTER	CHAN 4,5	2	
90536-7330303	NR1A			3-132
	UNIVAC 1543 MTU	CHAN 02	1	
	DDC MDMS-20 6300 DISK	CHAN 17	2	
90536-7332166	PATAFBT			3-169
	UNIVAC 1545 MTU	CHAN 11	1	
	UNIVAC 1543 MTU	CHAN 13	2	

\* All bootstraps identified with an EM (Expanded Memory) were designed for the AN/UYYK-20A computers. All bootstraps will run on either an expanded memory DPS or a DPS without expanded memory (within their limitations).

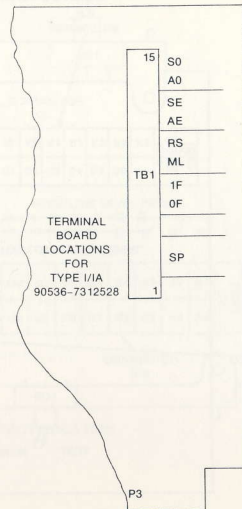
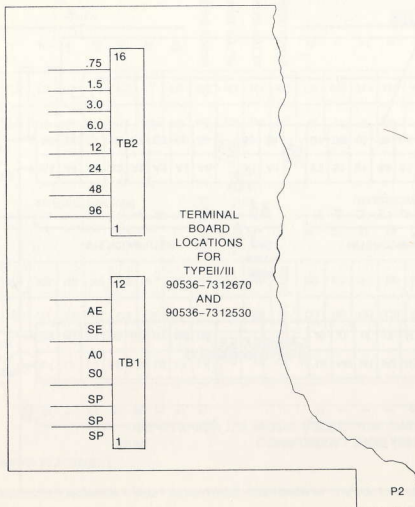


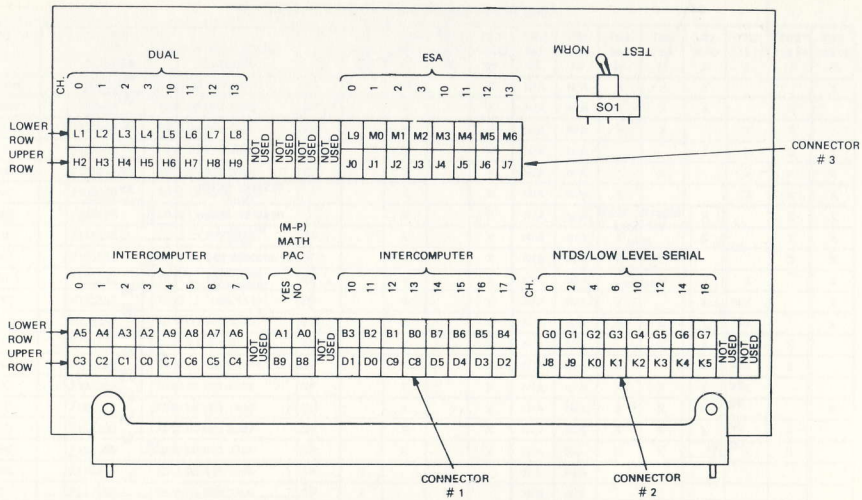
**TYPE II OR III JUMPER LOCATIONS (continued)**

	90536 PART NUMBER	NATIONAL STOCK NUMBER	TB1 1-6 SP	TB1 7&8 SO	TB1 8&9 AO	TB1 10&11 SE	TB1 11&12 AE	TB2 1&2 96	TB2 3&4 48	TB2 5&6 24	TB2 7&8 12	TB2 9&10 6	TB2 11&12 3	TB2 13&14 1.5	TB2 15&16 .75
MIL-188C ASYNC	7133291	7010 00 525 1383	SP		X		X	N/A	N/A	X	X	X			X
MIL-188C ASYNC	7133295	7010 00 525 1386	SP		X		X	N/A	N/A	X	X	X			X
MIL-188C ASYNC	7133300	7010 00 525 1388	SP		X		X	N/A	N/A	X	X		X	X	
RS232C ASYNC	7133310	7010 00 578 2336	SP		X		X	N/A	N/A			X	X	X	X
RS232C ASYNC	7133315	5999 01 065 8309	SP		X		X	N/A	N/A		X		X	X	X
RS232C ASYNC	7133320	7010 LL HHA 1609			X		X	N/A	N/A	X			X	X	X
RS232C ASYNC	7133325	7010 LL HHA 1610			X		X	N/A	N/A		X	X		X	X
RS232C ASYNC	7133330	7010 01 003 6382	SP		X		X	N/A	N/A	X		X		X	X
RS232C ASYNC	7133335	7010 01 003 6386	SP		X		X	N/A	N/A	X	X			X	X
RS232C ASYNC	7133340	7010 LL HHA 1613	SP		X		X	N/A	N/A		X	X	X		X
RS232C ASYNC	7133345	7010 LL HHA 1614	SP		X		X	N/A	N/A	X		X	X		X
RS232C ASYNC	7133350	7010 01 003 6383	SP		X		X	N/A	N/A	X	X		X		X
RS232C ASYNC	7133355	5999 01 065 8310	SP		X		X	N/A	N/A		X	X	X	X	
RS232C ASYNC	7133360	7010 LL HHA 1617	SP		X		X	N/A	N/A	X		X	X	X	
RS232C ASYNC	7133365	7010 01 003 6380	SP		X		X	N/A	N/A	X	X	X	X		
RS232C ASYNC	7133370	7010 00 525 1414	SP		X		X	N/A	N/A	X	X	X			X
RS232C ASYNC	7132100	7010 01 003 6387	SP		X		X	N/A	N/A	X	X	X			X
RS232C ASYNC	7132105	7010 00 578 2338	SP		X		X	N/A	N/A	X	X		X	X	
MIL-188C SYNC	7119441	7010 00 522 3590	SP	X			X	N/A	N/A						
RS232C SYNC	7119450	7010 00 578 2300	SP	X			X	N/A	N/A						

N/A IMPLIES NOT AVAILABLE

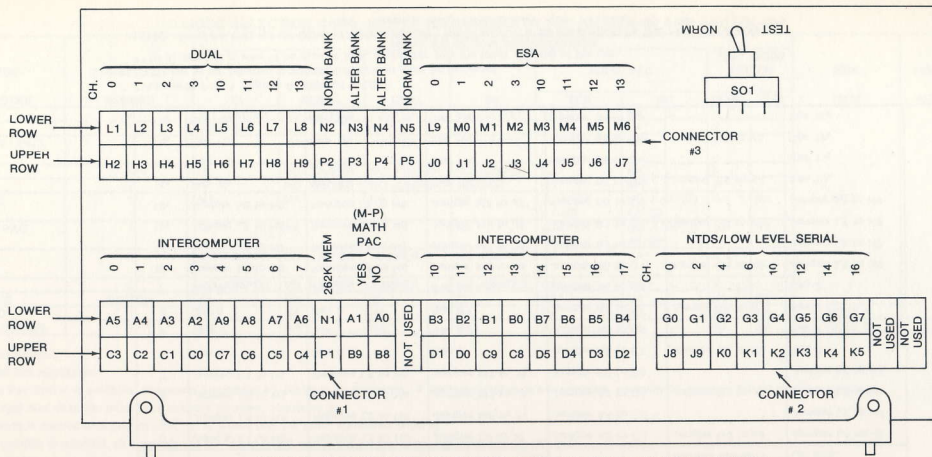
**TERMINAL BOARD LOCATIONS  
COMMON SERIAL PC ASSEMBLIES**





SEE PAGE 45 FOR JUMPER PLACEMENT

AN/UYK-20 I/O MODE SELECTION CARD JUMPER CONTACT LOCATION  
COMPONENT SIDE (90536-7125980-01)



AN/UYK-20A I/O MODE SELECTION CARD JUMPER CONTACT LOCATION  
COMPONENT SIDE (90536-7310512-01)

SEE PAGES 45 AND 46 FOR JUMPER PLACEMENT

NOTE: PINS P1 AND N1 OF CONNECTOR NUMBER 1 MUST ALWAYS BE JUMPED IN THE AN/UYK-20A(V).



**I/O MODE SELECTION CARD JUMPER LOCATIONS\***

CHAN.	CONNECTOR 3	CONNECTOR 3	CONNECTOR 3	CONNECTOR 1	CONNECTOR 2	CONNECTOR 3
	NORM (16-BIT)	DUAL (32-BIT)	ESA** (32-BIT)	IC*** (16,32)	NTDS/LOW LEVEL SERIAL (32-BIT)	VCALES, 188C, OR 232C
0	Jumper L1 to H2	Remove L1 to H2	Jumper L9 to J0	Jumper A5 to C3	Jumper G0 to J8	Jumper L1 to H2
1	Jumper L2 to H3	Remove L2 to H3	Jumper M0 to J1	Jumper A4 to C2	-	Jumper L2 to H3
2	Jumper L3 to H4	Remove L3 to H4	Jumper M1 to J2	Jumper A3 to C1	Jumper G1 to J9	Jumper L3 to H4
3	Jumper L4 to H5	Remove L4 to H5	Jumper M2 to J3	Jumper A2 to C0	-	Jumper L4 to H5
4	See 0	See 0	See 0	Jumper A9 to C7	Jumper G2 to K0	See 0
5	See 1	See 1	See 1	Jumper A8 to C6	-	See 1
6	See 2	See 2	See 2	Jumper A7 to C5	Jumper G3 to K1	See 2
7	See 3	See 3	See 3	Jumper A6 to C4	-	See 3
10 <sub>h</sub>	Jumper L5 to H6	Remove L5 to H6	Jumper M3 to J4	Jumper B3 to D1	Jumper G4 to K2	Jumper L5 to H6
11 <sub>h</sub>	Jumper L6 to H7	Remove L6 to H7	Jumper M4 to J5	Jumper B2 to D0	-	Jumper L6 to H7
12 <sub>h</sub>	Jumper L7 to H8	Remove L7 to H8	Jumper M5 to J6	Jumper B1 to C9	Jumper G5 to K3	Jumper L7 to H8
13 <sub>h</sub>	Jumper L8 to H9	Remove L8 to H9	Jumper M6 to J7	Jumper B0 to C8	-	Jumper L8 to H9
14 <sub>h</sub>	See 10 <sub>h</sub>	See 10 <sub>h</sub>	See 10 <sub>h</sub>	Jumper B7 to D5	Jumper G6 to K4	See 10 <sub>h</sub>
15 <sub>h</sub>	See 11 <sub>h</sub>	See 11 <sub>h</sub>	See 11 <sub>h</sub>	Jumper B6 to D4	-	See 11 <sub>h</sub>
16 <sub>h</sub>	See 12 <sub>h</sub>	See 12 <sub>h</sub>	See 12 <sub>h</sub>	Jumper B5 to D3	Jumper G7 to K5	See 12 <sub>h</sub>
17 <sub>h</sub>	See 13 <sub>h</sub>	See 13 <sub>h</sub>	See 13 <sub>h</sub>	Jumper B4 to D2	-	See 13 <sub>h</sub>

\*Volume 3, Part 1, Figures 9-152 and 9-153.

\*\* Jumper in the selected dual channel position must be removed.

\*\*\* If IC channel is also to be dual or ESA, IC jumper only the lower channel of the pair.

NOTE: PINS P1 AND N1 OF CONNECTOR NUMBER 1 MUST ALWAYS BE JUMPED IN THE AN/UYK-20A(V).

**I/O MODE SELECTION CARD JUMPER REQUIREMENTS FOR AN/UYK-20 AND AN/UYK-20A**

MODE SELECTED	CONNECTOR NUMBER	MODE SELECTION REQUIREMENTS						TEST MODE SWITCH	282K MEM	NORM BANK/ ALTER BANK		
		IC	NTDS/LOW LEVEL SERIAL	DUAL	ES	MATH PAC					NORM	TEST
						YES	NO					
NORMAL	3	NO JUMPER	NO JUMPER	JUMPER	NO JUMPER	NA*	NA*	X				
IC	1	JUMPER	NA	(1)	(1)	NA*	NA*	X				
NTDS/LOW LEVEL SERIAL	2	NA	JUMPER	JUMPER	NO JUMPER	NA*	NA*	X				
DUAL**	3	(1)	NO JUMPER	NO JUMPER	NO JUMPER	NA*	NA*	X				
ESA	3	(1)	NO JUMPER	NO JUMPER	JUMPER	NA*	NA*	X				
MATH PAC	1	NA	NA	NA	NA	JUMPER A1-B9	NO JUMPER A0-B8	NA	NA			
NO MATH PAC	1	NA	NA	NA	NA	JUMPER A1-B9	NO JUMPER A0-B8	NA	NA			
188C or VCALES	3	NO JUMPER	NO JUMPER	JUMPER	NO JUMPER	NA*	NA*	X				
232C	3	NO JUMPER	NO JUMPER	JUMPER	NO JUMPER	NA*	NA*	X				
TEST MODE	SWITCH	(2)	(2)	(2)	(2)	NA*	NA*	(2)	(2)			
EXPANDED	1	NA	NA	NA	NA	NA	NA	NA	NA	NOTE 4		
MEMORY OPTION	3	NA	NA	NA	NA	NA	NA	NA	NA	NOTE 3		

X Denotes Select.

NA Denotes Not Applicable.

\* If Math Pac Option is available, connector 1 contacts A1-B9 must be jumpered. If Math Pac Option is not available, connector 1 contacts A0-B8 must be jumpered.

\*\* All unused dual channels must have jumpers installed, connector 3.

(1) If IC mode is desired with dual or ESA, on IC select only the lower numbered channel.

(2) If test position is selected, all channels will be forced into IC mode except the upper half of dual/ESA channels.

(3) NORM BANK - for normal numbering of memory banks (stacks 0,1,2,3 - BANK 0; stacks 4,5,6,7 - BANK 1) Jumper contacts N2 to P2 and N5 to P5.

ALTER BANK - for INTERLEAVING numbering of memory banks (stacks 0,2,4,6 - BANK 0; stacks 1,3,5,7 - BANK 1) Jumper contacts N3 to P3 and N4 to P4. (ALTER is to be used only with expanded memory.)

(4) If DPS is an AN/UYK-20A, contact N1 must always be jumpered to P1.

(5) Expanded memory does not affect the jumpering of the other options, they remain the same as for the DPS with standard memory.

**AN/UYK-20 RETROFIT DEFINITION**

The AN/UYK-20 is currently being retrofitted to correct anomalies inherent to hardware design. Retrofit I and II are complete. To identify the current retrofit status of an AN/UYK-20 the Field Change (FC) plate will be stamped with MPL or FCO numbers. It should be noted, however, that all AN/UYK-20 computers delivered after the last serial number of the respective MPLs will have been retrofitted in the factory and will not be stamped with the MPL or FCO number.

Example: AA817 will not be stamped with MPL-1534, MPL-1592 or MPL-1698.

The retrofit number, MPL or FCO number, and serial number affected by the MPL are identified in the table below:

RET. I MPL-1534

Serials A1-A325, A327, A328, A330-A342, A344-A347, A413, A436, A490

RET. II MPL-1592

Serials A1-A442, A444-A461, A463-488, A490-A504, A507, A512-A515, A517, A519, A520, A525-A527, A530, A533, A535, A544-A546, A552, A556, A567, A574, A581, A586, A635.

RET. III MPL-1698

Serials A1-A816

RET. IV FCO-151513

Serials A1-A794 with DMA, A1-AA1204 with NTDS Serial I/O, A1-AA1619 with 3 Phase - 60 Hz. Pwr. Sup., A160, A770, A795-AA1084, AA1092, AA1095, AA1099, AA1104, AA1110, AA1111, AA1115, AA1120, AA1166, AA1204.

RET. V

FCO 190706 Serials A1-AA1500 with PIC I/O

FCO 190707 Serials AA1501-AA1672 with PIC I/O

FCO 205294 Serials A1-B2600 with NTDS Serial I/O

**All correspondence on retrofit status should be directed to NESEA Retrofit Coordinator:**

**Commanding Officer**

**Naval Electronic Systems Engineering Activity**

**St. Inigoes, MD 20684-0010**

**Attn: Code 2251**

**AN/UYK-20 ISEA**

**AV: 356-3511/3512**

**COM: 301-862-8815**

**AN/UYK-20 PUBLICATIONS, EQUIPMENT, AND PROGRAM TAPES AVAILABLE**

QTY PER EQUIP.	NAME	DESIGNATION	REQUIRED USE
1	TECHNICAL MANUAL. VOL. 1	SE610-AV-MMO-010 (NSN 0910-LP-043-7680)	TECHNICAL DOCUMENTATION REFERENCE DATA
1	TECHNICAL MANUAL. VOL. 2	SE610-AV-MMO-020 (NSN 0910-LP-043-7690)	
1	TECHNICAL MANUAL. VOL. 3 PART 1	SE610-AV-MMO-030 (NSN 0910-LP-043-7700)	EQUIPMENT DIAGRAMS
	VOL. 3 PART 2	SE610-AV-MMO-040 (NSN 0910-LP-043-7800)	
1	TECHNICAL MANUAL. VOL. 4	SE610-AV-MMO-050 (NSN 0910-LP-043-7900)	DIAGNOSTIC OP PROCEDURES
1	TECHNICAL MANUAL. VOL. 5	SE610-AV-MMO-060 (NSN 0910-LP-043-8000)	DIAGNOSTIC LISTINGS
1	TECHNICAL MANUAL. VOL. 6	SE610-AV-MMO-070 (NSN 0910-LP-043-8100)	DIAGNOSTIC LISTINGS
1	TECHNICAL MANUAL. VOL. 7	SE610-AV-MMO-080 (NSN 0910-LP-043-8200)	CONFIDENCE TESTS
1	HARDWARE USER'S GUIDE	TE610-AD-GYD-010	
1	CP/MEMORY DIAGNOSTIC PROGRAM TAPE	TE610-AD-SWP-010	TROUBLESHOOTING
1	I/O DIAGNOSTIC PROGRAM TAPE	TE610-AD-SWP-020	TROUBLESHOOTING
1	OPTIONS DIAGNOSTIC PROGRAM TAPE	TE610-AD-SWP-030	TROUBLESHOOTING
1	CONFIDENCE TEST (56K) PROGRAM TAPE(S)	TE610-AD-SWP-040	CONFIDENCE TESTING
1	CONFIDENCE (24K), CP/MEMORY PROGRAM TAPE	TE610-AD-SWP-050	CONFIDENCE TESTING
1	CONFIDENCE TEST (24K), I/O PROGRAM TAPE	TE610-AD-SWP-060	CONFIDENCE TESTING
1	CONFIDENCE TEST (24K), OPTIONS PROGRAM TAPE	TE610-AD-SWP-070	CONFIDENCE TESTING
*	MICRO GROWTH 1 DIAGNOSTIC TAPE	TE610-AD-SWP-080	TROUBLESHOOTING MICRO GROWTH 1 CARD
*	MICRO GROWTH 2 DIAGNOSTIC TAPE	TE610-AD-SWP-090	TROUBLESHOOTING MICRO GROWTH 2 CARD
*	MICRO GROWTH 3 DIAGNOSTIC TAPE	TE610-AD-SWP-100	TROUBLESHOOTING MICRO GROWTH 3 CARD
*	MICRO GROWTH 4 DIAGNOSTIC TAPE	TE610-AD-SWP-110	TROUBLESHOOTING MICRO GROWTH 4 CARD
1	SINGLE CHANNEL JUMPER PLUG, PARALLEL	90536-7150225-00 (NSN 5935-01-089-5457) OR -7126394-00 (NSN 7010-01-019-1541)	I/O END-AROUND JUMPERING (CHANNELS 0-3)
2	SINGLE CHANNEL JUMPER PLUG, PARALLEL	90536-7150226-00 (NSN 5935-01-089-5458) OR -7126394-00 (NSN 7010-01-019-1541)	I/O END-AROUND JUMPERING (CHANNELS 4-17)

\*ITEMS ARE REQUIRED ONLY IF THOSE OPTIONS ARE CONFIGURED INTO THE DPS. THE DOCUMENTS, TAPES, AND EQUIPMENT LISTED ARE AVAILABLE FROM:

COMMANDING OFFICER  
 NAVAL ELECTRONIC SYSTEMS ENGINEERING ACTIVITY  
 ST. INIGOES, MD 20684-0010  
 ATTN: CODE 2251  
 AN/UYK-20 ISEA  
 AV: 356-3511/3512  
 COM: 301-862-8815

AN/UYK-20 PUBLICATIONS, EQUIPMENT, AND PROGRAM TAPES AVAILABLE  
(continued)

QTY PER EQUIP.	NAME	DESIGNATION	REQUIRED USE
1	SINGLE CHANNEL JUMPER PLUG, SERIAL	90536-7150233-00 (NSN 5935-01-089-5459)	I/O JUMPERING OF SERIAL CHANNELS (1888C, RS232C, VACALES)
*	32-BIT (DUAL) CHANNEL JUMPER PLUG, PARALLEL	90536-7126375-00 (INPUT) (NSN 7010-01-100-3217) 90536-7126375-01 (OUTPUT) (NSN 7010-01-100-3218)	TO PERMIT 32-BIT (DUAL PARALLEL CHANNEL OPERATION) OPEN CABINET
1	HEX-HEAD DRIVER	90536-7903056-03 (NSN 5120-00-126-7282)	REMOVE CP
1	LOGIC CARD EXTRACTOR	90536-7100903-00 (NSN 7010-00-602-6004)	LOGIC PC CARDS
1	MEMORY CARD EXTRACTOR	90536-7134954-00 (Right-Hand) (NSN 7010-01-003-6117) 90536-7134953-00 (Left-Hand) (NSN 7010-00-602-6003)	REMOVE I/O AND MEMORY PC CARDS
REF DATA	OUTLINE AND INSTALLATION DWG DRAWING LIST BLOCK DIAGRAM CABLE RUN SHEETS SUMMARY OF INSTALL MTLS I/O SHEETS	NAVSEA RE-E5033644 NAVSEA RE-B5033696 NAVSEA RE-D5033642 NAVSEA RE-A5033640 NAVSEA RE-C5033641	

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THE DOCUMENTS, TAPES, AND EQUIPMENT LISTED ARE AVAILABLE FROM:

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ST. INGOES, MD 20684-0010  
ATTN: CODE 2251  
AN/UYK-20 ISEA  
AV: 356-3511/3512  
COM: 301-862-8815

AN/UYK-20A PUBLICATIONS, EQUIPMENT, AND PROGRAM TAPES AVAILABLE

QTY PER EQUIP.	NAME	DESIGNATION	REQUIRED USE
1	TECHNICAL MANUAL. VOL. 1	SE610-A3-MMO-010 (NSN 0910-LP-302-8500)	TECHNICAL DOCUMENTATION REFERENCE DATA
1	TECHNICAL MANUAL. VOL. 2	SE610-A3-MMO-020 (NSN 0910-LP-302-8600)	EQUIPMENT DIAGRAMS
1	TECHNICAL MANUAL. VOL. 3	SE610-A3-MMO-030 (NSN 0910-LP-302-8700)	DIAGNOSTIC OP PROCEDURES
1	TECHNICAL MANUAL. VOL. 4	SE610-A3-MMO-040 (NSN 0910-LP-302-8800)	LISTINGS
1	TECHNICAL MANUAL. VOL. 5	SE610-A3-MMO-050 (NSN 0910-LP-302-8900)	DIAGNOSTIC LISTINGS
1	TECHNICAL MANUAL. VOL. 6	SE610-A3-MMO-060 (NSN 0910-LP-302-9000)	CONFIDENCE TESTS
1	TECHNICAL MANUAL. VOL. 7	SE610-A3-MMO-070 (NSN 0910-LP-302-9100)	
1	HARDWARE USER'S GUIDE	SE610-A3-GYD-010	
1	CP/MEMORY DIAGNOSTIC PROGRAM TAPE	TE610-AL-SWP-01A	TROUBLESHOOTING
1	I/O DIAGNOSTIC PROGRAM TAPE	TE610-AL-SWP-02A	TROUBLESHOOTING
1	OPTIONS DIAGNOSTIC PROGRAM TAPE	TE610-AL-SWP-03A	TROUBLESHOOTING
1	CONFIDENCE TEST (56K) PROGRAM (TAPES)	TE610-AL-SWP-04A	CONFIDENCE TESTING
1	CONFIDENCE (24K), CP/MEMORY PROGRAM TAPE	TE610-AL-SWP-05A	CONFIDENCE TESTING
1	CONFIDENCE TEST (24K), I/O PROGRAM TAPE	TE610-AL-SWP-06A	CONFIDENCE TESTING
1	CONFIDENCE TEST (24K), OPTIONS PROGRAM TAPE	TE610-AL-SWP-07A	CONFIDENCE TESTING
*	MICRO GROWTH 1 DIAGNOSTIC TAPE	TE610-AL-SWP-080	TROUBLESHOOTING MICRO GROWTH 1 CARD
*	MICRO GROWTH 2 DIAGNOSTIC TAPE	TE610-AL-SWP-090	TROUBLESHOOTING MICRO GROWTH 2 CARD
*	MICRO GROWTH 3 DIAGNOSTIC TAPE	TE610-AL-SWP-100	TROUBLESHOOTING MICRO GROWTH 3 CARD
*	MICRO GROWTH 4 DIAGNOSTIC TAPE	TE610-AL-SWP-11A	TROUBLESHOOTING MICRO GROWTH 4 CARD
1	SINGLE CHANNEL JUMPER PLUG, PARALLEL	90536-7150225-00 (NSN 5935-01-089-5457) OR -7126394-00 (NSN 7010-01-019-1541)	I/O END-AROUND JUMPERING (CHANNELS 0-3)
2	SINGLE CHANNEL JUMPER PLUG, PARALLEL	90536-7150226-00 (NSN 5935-01-089-5458) OR -7126394-00 (NSN 7010-01-019-1541)	I/O END-AROUND JUMPERING (CHANNELS 4-17)
1	SINGLE CHANNEL JUMPER PLUG, SERIAL	90536-7150233-00 (NSN 5935-01-089-5459)	I/O JUMPERING OF SERIAL CHANNELS (1888C, RS232C, VACALES)

\*ITEMS ARE REQUIRED ONLY IF THOSE OPTIONS ARE CONFIGURED INTO THE DPS.  
THE DOCUMENTS, TAPES, AND EQUIPMENT LISTED ARE AVAILABLE FROM:

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ST. INGOES, MD 20684-0010  
ATTN: CODE 2251  
AN/UYK-20 ISEA  
AV: 356-3511/3512  
COM: 301-862-8815

AN/UYK-20A PUBLICATIONS, EQUIPMENT, AND PROGRAM TAPES AVAILABLE  
(continued)

QTY PER EQUIP.	NAME	DESIGNATION	REQUIRED USE
1	32-BIT (DUAL) CHANNEL JUMPER PLUG, PARALLEL	90536-7126375-00 (INPUT) (NSN 7010-01-100-3217) 90536-7126375-01 (OUTPUT) (NSN 7010-01-100-3218) 90536-7903056-03	TO PERMIT 32-BIT (DUAL PARALLEL CHANNEL OPERATION) OPEN CABINET
1	HEX-HEAD DRIVER	(NSN 5120-00-126-7282) 90536-7100903-00	REMOVE CP LOGIC PC CARDS
1	LOGIC CARD EXTRACTOR	(NSN 7010-00-602-6004) 90536-7134954-00 (Right-Hand) (NSN 7010-01-003-6117) 90536-7134953-00 (Left-Hand) (NSN 7010-00-602-6003)	REMOVE I/O AND MEMORY PC CARDS
1	MEMORY CARD EXTRACTOR	NAVSEA RE-E5033644	
REF DATA	OUTLINE AND INSTALLATION DWG DRAWING LIST BLOCK DIAGRAM CABLE RUN SHEETS SUMMARY OF INSTALL MTL'S I/O SHEETS	NAVSEA RE-B5033696 NAVSEA RE-D5033642 NAVSEA RE-A5033640 NAVSEA RE-C5033641 NAVSEA RE-D5033643	

\*ITEMS ARE REQUIRED ONLY IF THOSE OPTIONS ARE CONFIGURED INTO THE DPS. THE DOCUMENTS, TAPES, AND EQUIPMENT LISTED ARE AVAILABLE FROM:

COMMANDING OFFICER  
NAVAL ELECTRONIC SYSTEMS ENGINEERING ACTIVITY  
ST. INIGOOES, MD 20684-0010  
ATTN: CODE 2251  
AN/UYK-20 ISEA  
AV: 356-3511/3512  
COM: 301-862-8815

PART NUMBER	SUPERSEDES	SUPERSEDED BY	PART NUMBER	SUPERSEDES	SUPERSEDED BY
905411-04	-	7150314-00	7125157-01	7125156-01	-
905411-06	-	7150314-01	7125175-01	-	-
7092030-01	-	7092031-01	7125235-01	-	7125236-01
7092031-01	7092030-01	7092032-01	7125236-01	-	7125237-01
7092032-01	7092031-01	7125960-01	7125237-01	-	7125240-01
7092175-01	-	7092176-01	7125240-01	-	7125241-01
7092176-01	7092175-01	7150210-01	7125241-01	-	7125240-01
7092181-01	-	7136265-01	7125275-01	-	7125276-01
7092185-01	-	7092187-01	7125276-01	-	7125275-01
7092187-01	7092185-01	-	7125290-01	-	-
7092195-01	-	-	7125305-01	-	7125306-01
7092200-01	-	7092201-01	7125306-01	-	7125307-01
7092201-01	7092200-01	-	7125307-01	-	7125305-01
7101824-01	-	7101824-02	7125310-01	-	7125311-01
7101824-02	7101824-01	7101824-03	7125311-01	-	7125310-01
7101824-03	-	7101824-02	7125380-01	-	-
7101840-00	-	7135560-00	7125385-01	-	7125386-01
7101875-00	-	7135561-00	7125386-01	-	7125387-01
7101880-00	-	7150355-00	7125387-01	-	7125386-01
7101885-00	-	7135563-00	7125405-01	-	7125406-01
7101963-01	-	-	7125406-01	-	7125405-01
7101963-02	-	-	7125415-01	-	7125416-01
7101966-01	-	-	7125416-01	-	7125415-01
7101966-02	-	-	7125417-01	-	7125416-01
7101990-00	-	7135564-00	7125500-01	-	-
7101995-00	-	7135565-00	7125510-01	-	7150465-01
7118316-01	-	7150465-01	7125665-01	-	7125666-01
7119380-01	-	-	7125666-01	-	7150220-01
7119385-01	-	7132152-01	7125925-01	-	7125926-01
-	-	-02	7125926-01	-	7125925-01
-	-	-03	7125929-01	-	7125961-01
7119390-01	-	7132154-01	7125961-01	-	7125960-01
-	-	-02	7125980-01	-	7150320-01
-	-	-03	7126065-01	-	7126066-01
7119395-01	-	-	7126066-01	-	7126065-01
7119400-01	-	7119401-01	7126070-01	-	7126071-01
7119401-01	7119400-01	7132146-01	7126071-01	-	7137000-01
7119405-01	-	7132150-01	7126125-01	-	-
-	-	-02	7126130-01	-	-
-	-	-03	7126135-01	-	7126136-01
7119410-01	-	-	7126136-01	-	7126137-01
7119415-01	-	7132156-01	7126137-01	-	7150395-01
-	-	-02	7126140-01	-	7126141-01
-	-	-03	7126141-01	-	7126142-01
7119420-01	-	7132158-01	7126142-01	-	7126141-01
-	-	-02	7126145-01	-	7126146-01
-	-	-03	7126146-01	-	7126147-01
7119425-01	-	7119426-01	7126147-01	-	7136295-01
7119426-01	7119425-01	7150325-01	7126148-01	-	7126151-01
7119430-01	-	7119431-01	7126151-01	-	7126150-01
7119431-01	7119430-01	7119432-01	7126155-01	-	7126156-01
7119432-01	7119431-01	7119432-02	7126156-01	-	7126155-01
7119432-02	7119432-01	-	7126160-01	-	-
7119435-01	-	7119436-01	7126165-01	-	7126166-01
7119436-01	7119435-01	7119437-01	7126166-01	-	7126167-01
7119437-01	7119436-01	7312528-00	7126167-01	-	7126168-01
7119440-01	-	7119441-01	7126170-01	-	7126171-01
7119441-01	7119440-01	7312530-00	7126171-01	-	7126172-01
-	-	-01	7126172-01	-	-
-	-	-02	7126175-01	-	-
7119445-01	-	7119446-01	7126180-01	-	7126181-01
7119446-01	7119445-01	7312528-00	7126181-01	-	7126180-01
7119450-01	-	7312670-00	7126185-01	-	7126186-01
-	-	-02	7126186-01	-	7150420-01
-	-	-04	7126190-01	-	7126191-01
7125125-01	-	7125126-01	7126191-01	-	7126190-01
7125126-01	7125125-01	7125127-01	7126195-01	-	7136350-01
7125127-01	7125126-01	7125128-01	7126196-01	-	7126196-01
7125128-01	7125127-01	7125129-01	7126200-01	-	7150405-01
7125129-01	7125128-01	-	7126200-02	-	7126200-02
7125130-01	-	7125131-01	7126205-01	-	7126200-01
7125131-01	7125130-01	7125132-01	7126206-01	-	7126206-01
7125132-01	7125131-01	7125133-01	7126207-01	-	7126207-01
7125133-01	7125132-01	-	7126207-01	-	7126206-01
-	-	7125136-01	7126375-01	-	7126376-00
7125136-01	7125135-01	-	7126382-04	-	-
7125155-01	-	7125156-01	7126384-00	-	7128082-00
7125156-01	7125155-01	7125157-01	7126386-00	-	7150486-00
-	-	-	-	-	7150490-00

## AN/UYK-20 REPLACEABLE ASSEMBLIES LIST (continued)

PART NUMBER	SUPERSEDES	SUPERSEDED BY	PART NUMBER	SUPERSEDES	SUPERSEDED BY
712802-00	7126382-04	-			-01
7132100-01	-	7312670-00,			-02
		-02,	7133265-01	-	7312630-00
		-04			-01,
7132105-01	-	7312670-00,			-02
		-02,	713270-01	-	7133271-01
		-04			7312330-00
7132110-01	-	-			-01
7132115-01	-	7132148-01			-02
7132120-01	-	7132121-01,	7133275-01	-	7312530-00
		-02,			-01,
		-03			-02
7132121-01	7132120-01	-	7133280-01	-	7312530-00
7132121-02	7132120-01	-			-01,
7132121-03	7132120-01	-			-02
7132125-01	-	7132126-01	7133285-01	-	7312530-00
7132126-01	7132125-01	-			-01,
7132130-01	-	7132131-01,			-02
		-01,	7133290-01	-	7133291-01
		-03			7133291-01
7132131-01	7132130-01	-			7133290-01
7132131-02	7132130-01	-			-01,
7132131-03	7132130-01	-	7133295-01	-	-02
7132135-01	-	7132136-01			-01,
7132136-01	7132135-01	-			-02
7132140-01	-	-	7133300-01	-	7312530-00
7132146-01	7119401-01	7132146-11,			-01,
		-12,			-02
		-13	7133305-01	-	7133306-01
7132146-11	7132146-01	-			7133305-01
7132146-12	7132146-01	-			7312528-00
7132146-13	7132146-01	-			-01,
7132148-01	7132115-01	7132148-11,	7133315-01	-	-02
		-12,			-04
		-13			7312670-00
7132148-11	7132148-01	-			-02,
7132148-12	7132148-01	-	7133320-01	-	-04
7132148-13	7132148-01	-			-02
7132150-01	7119405-01	-			-04
7132150-02	7119405-01	-	7133325-01	-	7312670-00
7132150-03	7119405-01	-			-02,
7132152-01	7119385-01	-			-04
7132152-02	7119385-01	-	7133330-01	-	7312670-00
7132152-03	7119385-01	-			-04
7132154-01	7119390-01	-			-04
7132154-02	7119390-01	-	7133335-01	-	7312670-00
7132154-03	7119390-01	-			-02,
7132156-01	7119415-01	-			-04
7132156-02	7119415-01	-	7133340-01	-	7312670-00
7132156-03	7119415-01	-			-02,
7132158-01	7119420-01	-			-04
7132158-02	7119420-01	-	7133345-01	-	7312670-00
7132158-03	7119420-01	-			-02,
7132199-00	-	7132199-01			-04
7132199-01	7132199-00	-	7133350-01	-	7312670-00
7133225-01	-	7133227-01			-02,
7133226-01	7133225-01	-			-04
7133227-01	7133226-01	-	7133355-01	-	7312670-00
7133230-01	-	7312528-00			-02,
7133231-01	-	7133231-01			-04
		7312530-00	7133360-01	-	7312670-00
		-01,			-02,
		-02			-04
7133235-01	-	7312530-00			7133650-01
		-01,	7133365-01	-	7312670-00
		-02			-02,
7133240-01	-	7312530-00			-04
		-01,	7133370-01	-	7312670-00
		-02			-02,
7133245-01	-	7312530-00			-04
		-01,	7133909-00	-	7133909-01
		-02			7133909-01
7133250-01	-	7312530-00			7133909-02
		-01,	7133910-00	-	7133910-01
		-02			7133910-02
7133255-01	-	7312530-00			7133910-03
		-01,	7133934-00	-	7133934-01
		-02			7133934-02
7133260-01	-	7312530-00	7133934-01	-	7133934-00

## AN/UYK-20 REPLACEABLE ASSEMBLIES LIST (continued)

PART NUMBER	SUPERSEDES	SUPERSEDED BY	PART NUMBER	SUPERSEDES	SUPERSEDED BY
7133934-02	7133934-01	7134994-00	7136416-01	7136415-01	7136417-01
7133943-00	-	7309623-00	7136417-01	7136416-01	-
7133943-01	-	7309623-01	7136420-01	-	-
7134942-00	-	-	7136425-01	-	-
7134942-01	-	-	7136430-01	-	-
7134974-02	-	7308013-00	7136435-01	-	-
7134974-03	-	7308013-01	7136440-01	-	-
7134994-00	7133934-02	7134994-01	7136445-01	-	-
7134994-01	7134994-00	7134994-02	7136450-01	-	-
7134994-02	7134994-01	7134994-03	7136455-01	-	-
7134994-03	7134994-02	-	7136460-01	-	-
7134998-00	-	-	7136465-01	-	-
7134998-01	-	-	7136475-01	-	-
7135560-00	7101840-00	7150350-00	7136480-01	-	-
7135561-00	7101875-00	7150351-00	7136490-01	-	-
7135563-00	7101885-00	7150353-00	7136500-01	-	-
7135564-00	7101990-00	7150354-00	7136505-01	-	7136506-01
7135565-00	7101995-00	7150355-00	7136506-01	7136505-01	-
7135570-00	-	7135570-02	7136510-01	-	-
7135570-01	-	7135570-03	7136515-01	-	-
7135570-02	7135570-00	7150383-00	7136520-01	-	7136526-01
7135570-03	7135570-01	7150383-01	7136525-01	-	7136527-01
7136150-01	-	-	7136526-01	7136525-01	-
7136155-01	-	-	7136527-01	7136526-01	-
7136160-01	-	-	7136530-01	-	7136531-01
7136165-01	-	-	7136531-01	7136530-01	-
7136170-01	-	-	7136535-01	-	-
7136185-01	-	-	7136540-01	7136186-01	-
7136186-01	7136185-01	-	7136545-01	-	-
7136190-01	-	-	7136550-01	-	-
7136195-01	-	-	7136555-01	-	-
7136205-01	-	-	7136560-01	-	-
7136210-01	-	-	7136565-01	-	7136566-01
7136215-01	-	-	7136570-01	-	-
7136216-01	7136215-01	-	7136575-01	-	-
7136220-01	-	-	7136575-01	-	-
7136225-01	7136220-01	-	7136580-01	-	7136581-01
7136226-01	7136225-01	-	7136581-01	7136580-01	-
7136230-01	-	-	7136585-01	-	7136586-01
7136235-01	-	-	7136590-01	-	7136587-01
7136245-01	-	-	7136595-01	-	7136588-01
7136250-01	-	-	7136600-01	-	7136587-01
7136255-01	7136250-01	-	7136590-01	-	7136591-01
7136256-01	7136255-01	-	7136591-01	7136590-01	-
7136260-01	-	-	7136592-01	7136591-01	-
7136265-01	7092181-01	7136266-01	7136595-01	-	-
7136266-01	7136265-01	-	7136600-01	-	-
7136270-01	-	-	7136605-01	-	7136631-01
7136275-01	-	-	7136610-01	-	7136630-01
7136280-01	-	-	7136615-01	-	7136636-01
7136281-01	7136280-01	-	7136620-01	-	7136635-01
7136285-01	-	-	7136625-01	-	-
7136290-01	-	-	7136630-01	7136281-01	-
7136291-01	7136290-01	-	7136631-01	-	-
7136295-01	7126147-01	-	7136635-01	-	-
7136305-01	-	-	7136640-01	-	7136655-01
7136310-01	-	-	7136645-01	-	7136656-01
7136315-01	-	-	7136650-01	7136640-01	7136662-01
7136320-01	-	-	7136655-01	-	7136663-01
7136325-01	-	-	7136660-01	-	7136666-01
7136330-01	-	-	7136665-01	7136655-01	7136667-01
7136335-01	-	-	7136670-01	7136666-01	-
7136340-01	-	-	7136675-01	-	7136671-01
7136345-01	7126191-01	7136351-01	7136680-01	-	-
7136350-01	7136350-01	-	7136685-01	-	-
7136355-01	7136360-01	-	7136690-01	-	-
7136360-01	-	-	7136695-01	-	-
7136365-01	7136370-01	-	7136700-01	-	-
7136370-01	-	-	7136705-01	-	-
7136375-01	-	-	7136710-01	-	-
7136376-01	7136375-01	-	7136715-01	-	-
7136380-01	-	-	7136720-01	-	-
7136385-01	-	-	7136725-01	-	-
7136390-01	-	-	7136730-01	-	-
7136395-01	-	-	7136735-01	-	-
7136400-01	-	-	7136740-01	-	-
7136405-01	-	-	7136745-01	-	-
7136410-01	-	-	7136750-01	-	-
7136415-01	-	-	7136755-01	-	-

## AN/UYK-20 REPLACEABLE ASSEMBLIES LIST (continued)

PART NUMBER	SUPERSEDES	SUPERSEDED BY	PART NUMBER	SUPERSEDES	SUPERSEDED BY
7136860-01	-	-	7150355-01	7150355-00	7150355-02
7136865-01	-	-	7150355-02	7150355-01	-
7136870-01	-	-	7150383-00	7155570-02	7150383-02
7136875-01	-	7136876-01	7150383-01	7135570-03	7150383-03
7136876-01	7136875-01	-	7150383-02	7150383-00	7308028-00
7136880-01	-	-	7150383-03	7150383-01	7308028-01
7136885-01	-	7136886-01	7150396-01	7126137-01	7150396-01
7136886-01	7136885-01	7136887-01	7150396-01	7150395-01	7150397-01
7136887-01	7136886-01	7136888-01	7150397-01	7150396-01	-
7136888-01	7136887-01	-	7150400-01	7125387-01	7150401-01
7136890-01	-	7136891-01	7150401-01	7150400-01	-
7136891-01	-	-	7150405-01	7126196-01	-
7136895-01	7136890-01	-	7150415-01	-	-
7136896-01	-	7136896-01	7150420-01	7126186-01	7150421-01
7136899-01	-	-	7150421-01	7150420-01	-
7136900-01	-	-	7150460-01	-	7150465-01
7136905-01	7136371-01	-	7150465-01	7118316-01	-
7136915-01	-	-	7150465-01	7125510-01	-
7136920-01	-	-	7150465-01	7150460-01	-
7136925-01	-	-	7150475-01	7126151-01	-
7136930-01	-	-	7150480-01	7126207-01	-
7136935-01	-	-	7150486-00	7126384-00	-
7136940-01	-	7136941-01	7150490-00	7126386-00	-
7136941-01	7136940-01	-	7155180-01	-	-
7136945-01	-	7136946-01	7157864-01	-	7310594-00
7136946-01	7136945-01	-	7308013-00	7134974-02	-
7136950-01	-	7136951-01	7308013-01	7134974-03	-
7136951-01	7136950-01	7136952-01	7308028-00	7150383-02	-
7136952-01	7136951-01	-	7308028-01	7150383-03	-
7136955-01	-	-	7309295-01	-	-
7136960-01	-	-	7309623-00	7133943-00	-
7136965-01	-	-	7309623-01	7133943-01	-
7136970-01	-	-	7310014-06	-	7310014-08
7136975-01	-	-	7310014-07	-	7310014-09
7136980-01	-	-	7310014-08	7310014-06	-
7137000-01	7126071-01	-	7310014-09	7310014-07	-
7137025-01	-	-	7310022-18	-	-
7137035-01	-	-	7310010-01	-	-
7137045-01	-	-	7310512-01	-	-
7137070-01	-	-	7310514-01	-	7310514-02
7137130-01	-	7137130-02	7310514-02	7310514-01	-
7137130-02	7137130-01	-	7310516-01	-	7310516-02
7150210-01	7092176-01	-	7310516-02	7310516-01	-
7150220-01	7125666-01	-	7310518-01	-	-
7150267-00	-	-	7310520-01	-	-
7150267-01	-	-	7310522-01	-	-
7150295-01	7150322-01	-	7310524-01	-	-
7150304-00	-	-	7310526-01	-	-
7150314-00	905411-04	-	7310534-01	-	7310534-02
7150314-01	905411-06	-	7310534-01	7310534-01	7310534-02
7150320-01	7125961-01	7150322-01	7310534-02	7310534-02	7310534-03
7150322-01	7150320-01	7150295-01	7310534-03	7310534-03	7310534-05
7150325-01	719426-01	7150326-01	7310534-05	7310534-04	-
7150326-01	7150325-01	7310690-01	7310536-01	-	7310536-02
7150338-01	-	7310536-02	7310536-02	7310536-01	7310536-03
7150338-02	-	7310536-03	7310536-03	7310536-02	-
7150338-03	-	7310538-01	7310594-00	7157864-01	-
7150350-00	7135560-00	7150350-01	7310690-01	7150326-01	7312344-01
7150350-01	7150350-00	7150350-02	7312344-01	7310690-01	7312344-02
7150350-02	7150350-01	-	7312344-02	7312344-01	7312344-03
7150351-00	7150351-00	7150351-02	7312344-03	7312344-02	7312344-04
7150351-01	7150351-01	7150351-03	7312344-04	7312344-03	7312344-05
7150351-02	7150351-02	-	7312344-05	7312344-04	7312344-06
7150351-03	7150351-03	-	-	-	-07
7150352-00	7101880-00	7150352-01	7312344-06	-	-08
7150352-01	7150352-00	7150352-02	-	-	-
7150352-02	7150352-01	7150352-03	7312344-06	7312344-05	-
7150352-03	7150352-02	7150352-04	7312344-06	7312344-06	-
7150352-04	7150352-03	-	7312344-07	-	-
7150353-00	7135563-00	7150353-01	7312528-00	7119446-01	-
7150353-01	7150353-00	7150353-02	7312528-00	7119437-01	-
7150353-02	7150353-01	7150353-03	7312528-00	7133227-01	-
7150353-03	7150353-02	-	7312528-00	7133066-01	-
7150354-00	7135564-00	7150354-01	7312530-00	7119441-01	-
7150354-01	7150354-00	7150354-02	7312530-00	7133231-01	-
7150354-02	7150354-01	7150354-03	7312530-00	7133235-01	-
7150354-03	7150354-02	7150354-04	7312530-00	7133240-01	-
7150354-04	7150354-03	-	7312530-00	7133245-01	-
7150355-00	7135565-00	7150355-01	-	-	-

## AN/UYK-20 REPLACEABLE ASSEMBLIES LIST (continued)

PART NUMBER	SUPERSEDES	SUPERSEDED BY	PART NUMBER	SUPERSEDES	SUPERSEDED BY
7125300-00	7132500-01	-	7132670-04	7133320-01	-
7125300-00	7132500-01	-	7132670-04	7133315-01	-
7125300-00	7132600-01	-	7132670-04	7133320-01	-
7125300-00	7132600-01	-	7132670-04	7133325-01	-
7125300-00	7132600-01	-	7132670-04	7133330-01	-
7125300-00	7132600-01	-	7132670-04	7133335-01	-
7125300-00	7132600-01	-	7132670-04	7133340-01	-
7125300-00	7132600-01	-	7132670-04	7133345-01	-
7125300-00	7132600-01	-	7132670-04	7133350-01	-
7125300-00	7132600-01	-	7132670-04	7133355-01	-
7125300-00	7132600-01	-	7132670-04	7133360-01	-
7125300-00	7132600-01	-	7132670-04	7133365-01	-
7125300-00	7132600-01	-	7132670-04	7133370-01	-
7125300-00	7132600-01	-	7132670-04	7133375-01	-
7125300-00	7132600-01	-	7132670-04	7133380-01	-
7125300-00	7132600-01	-	7132670-04	7133385-01	-
7125300-00	7132600-01	-	7132670-04	7133390-01	-
7125300-00	7132600-01	-	7132670-04	7133395-01	-
7125300-00	7132600-01	-	7132670-04	7133400-01	-
7125300-00	7132600-01	-	7132670-04	7133405-01	-
7125300-00	7132600-01	-	7132670-04	7133410-01	-
7125300-00	7132600-01	-	7132670-04	7133415-01	-
7125300-00	7132600-01	-	7132670-04	7133420-01	-
7125300-00	7132600-01	-	7132670-04	7133425-01	-
7125300-00	7132600-01	-	7132670-04	7133430-01	-
7125300-00	7132600-01	-	7132670-04	7133435-01	-
7125300-00	7132600-01	-	7132670-04	7133440-01	-
7125300-00	7132600-01	-	7132670-04	7133445-01	-
7125300-00	7132600-01	-	7132670-04	7133450-01	-
7125300-00	7132600-01	-	7132670-04	7133455-01	-
7125300-00	7132600-01	-	7132670-04	7133460-01	-
7125300-00	7132600-01	-	7132670-04	7133465-01	-
7125300-00	7132600-01	-	7132670-04	7133470-01	-
7125300-00	7132600-01	-	7132670-04	7133475-01	-
7125300-00	7132600-01	-	7132670-04	7133480-01	-
7125300-00	7132600-01	-	7132670-04	7133485-01	-
7125300-00	7132600-01	-	7132670-04	7133490-01	-
7125300-00	7132600-01	-	7132670-04	7133495-01	-
7125300-00	7132600-01	-	7132670-04	7133500-01	-
7125300-00	7132600-01	-	7132670-04	7133505-01	-
7125300-00	7132600-01	-	7132670-04	7133510-01	-
7125300-00	7132600-01	-	7132670-04	7133515-01	-
7125300-00	7132600-01	-	7132670-04	7133520-01	-
7125300-00	7132600-01	-	7132670-04	7133525-01	-
7125300-00	7132600-01	-	7132670-04	7133530-01	-
7125300-00	7132600-01	-	7132670-04	7133535-01	-
7125300-00	7132600-01	-	7132670-04	7133540-01	-
7125300-00	7132600-01	-	7132670-04	7133545-01	-
7125300-00	7132600-01	-	7132670-04	7133550-01	-
7125300-00	7132600-01	-	7132670-04	7133555-01	-
7125300-00	7132600-01	-	7132670-04	7133560-01	-
7125300-00	7132600-01	-	7132670-04	7133565-01	-
7125300-00	7132600-01	-	7132670-04	7133570-01	-
7125300-00	7132600-01	-	7132670-04	7133575-01	-
7125300-00	7132600-01	-	7132670-04	7133580-01	-
7125300-00	7132600-01	-	7132670-04	7133585-01	-
7125300-00	7132600-01	-	7132670-04	7133590-01	-
7125300-00	7132600-01	-	7132670-04	7133595-01	-
7125300-00	7132600-01	-	7132670-04	7133600-01	-
7125300-00	7132600-01	-	7132670-04	7133605-01	-
7125300-00	7132600-01	-	7132670-04	7133610-01	-
7125300-00	7132600-01	-	7132670-04	7133615-01	-
7125300-00	7132600-01	-	7132670-04	7133620-01	-
7125300-00	7132600-01	-	7132670-04	7133625-01	-
7125300-00	7132600-01	-	7132670-04	7133630-01	-
7125300-00	7132600-01	-	7132670-04	7133635-01	-
7125300-00	7132600-01	-	7132670-04	7133640-01	-
7125300-00	7132600-01	-	7132670-04	7133645-01	-
7125300-00	7132600-01	-	7132670-04	7133650-01	-
7125300-00	7132600-01	-	7132670-04	7133655-01	-
7125300-00	7132600-01	-	7132670-04	7133660-01	-
7125300-00	7132600-01	-	7132670-04	7133665-01	-
7125300-00	7132600-01	-	7132670-04	7133670-01	-
7125300-00	7132600-01	-	7132670-04	7133675-01	-
7125300-00	7132600-01	-	7132670-04	7133680-01	-
7125300-00	7132600-01	-	7132670-04	7133685-01	-
7125300-00	7132600-01	-	7132670-04	7133690-01	-
7125300-00	7132600-01	-	7132670-04	7133695-01	-
7125300-00	7132600-01	-	7132670-04	7133700-01	-
7125300-00	7132600-01	-	7132670-04	7133705-01	-
7125300-00	7132600-01	-	7132670-04	7133710-01	-
7125300-00	7132600-01	-	7132670-04	7133715-01	-
7125300-00					

PART NUMBER	SUPERSEDES	SUPERSEDED BY
7327170-01	-	7330301-01
7327704-01	-	-
7330301-01	7327170-01	-
7330302-01	7319065-01	-
7330303-01	7319072-01	-
7332166-01	-	-

## AN/UJK-20/20A ABBREVIATED ENHANCED DIAGNOSTIC OPERATING PROCEDURES

The procedures contained in the following paragraphs provide abbreviated instructions necessary to execute the Diagnostic Programs. Any errors detected while executing these procedures are explained in SE610-AV-MMO-050 paragraphs 11-16 through 11-27 for the AN/UJK-20, and in SE610-A3-MMO-040 paragraphs 11-16 through 11-27 for the AN/UJK-20A.

### Microdiagnostic Program Execution Procedure

1. Stop and Master Clear
2. Initial switch settings

ALTER MODE SET/CLR	SET
PROCESSOR DISABLE RT CLK	INT
PROCESSOR DISABLE ADV P	DOWN
PROCESSOR DISABLE INTER CMPTR TIME OUT	DOWN
BREAK PT READ/OFF	OFF
BREAK PT WRITE/OFF	OFF

3. Press DISPLAY SELECT CLR. DISPLAY NUMBER = 0
4. Press MODE MICRO STEP
5. Set DIAGNOSTIC DISPLAY switch down and DIAGNOSTIC JUMP switch to up
6. Press MA CLR
7. Press MODE RUN indicator
8. Press GENL REG
9. Press DISPLAY NUMBER indicator switches corresponding to octal value of bootstrap load channel.
10. Press PROG RUN
11. Press AUTO START SWITCH four times
12. If bootstrap load channel is a MIL-STD-188C or RS-232C or VACALES type channel, set ALTER MODE SET/CLR to CLR position.
13. Press DISPLAY SELECT CLR (initiates Microdiagnostics)
14. PROG RUN lite extinguish
15. REGISTER/DATA = 070707. For any other value see technical manual.

### CP/MEMORY DIAGNOSTIC OPERATING PROCEDURES

1. Load CP/Memory Diagnostics
2. Press GEN REG and DISPLAY SELECT CLR. Display = 0
3. Press REG/DATA SET/CLR. Display (GR0) = 000000
4. Set PROGRAM STOP 1/OFF switch to OFF
5. Set PROGRAM STOP 2/OFF switch to 2
6. Set BOOTSTRAP 1/2 switch to down position
7. Press and observe GENL DSPL. Indicator lit
8. Press REGISTER/DATA SET/CLR
9. Press REGISTER/DATA SET (P Reg.) switches 6 and 8 (000500)
10. Set AUTO START/START switches to START  
PROG RUN indicator extinguished  
REGISTER/DATA = 000522
11. Set PROGRAM STOP 1/OFF switch to 1 and PROGRAM STOP 2/OFF switch to OFF
12. Set BOOTSTRAP 1/2 switch to up position
13. Set AUTO START/START to START  
PROG RUN extinguished  
REGISTER/DATA (P reg.) = 000532
14. Set AUTO START/START to START  
PROG RUN extinguished  
REGISTER/DATA (P reg.) = 000551
15. Press GENL REG
16. Press DISPLAY NUMBER switches for octal 04. Observe REGISTER/DATA (GR4) = 000000
17. Press DISPLAY NUMBER switches for octal 05. Observe REGISTER/DATA (GR5) = 000536
18. Press DISPLAY NUMBER switches for octal 07. Observe REGISTER/DATA (GR7) = 000546
19. Press GENL DSPL switch
20. Press DISPLAY SELECT CLR
21. AUTO START/START to START  
PROG RUN indicator extinguished  
REGISTER/DATA (P reg.) = 000563
22. Set GR0, GR1, and GR2 to CP/Memory Configuration as follows:

GR0	Bit 0	Math Pac installed
	Bit 1	Micro Growth installed
	Bit 2	General Register set 2 installed
	Bit 3	DMA installed
GR1	Bits 4-15	Not used
	Bits 0-7	Memory Stacks installed
GR2	Bits 0-7	Memory Stacks to be tested

23. Set both PROGRAM STOP switches to up position
24. Press GENL DSPL and DISPLAY SELECT CLR
25. Press AUTO START/START to START  
Observe PROG RUN extinguishes  
REGISTER/DATA (P reg.):  
AN/UJK-20 = 000761  
AN/UJK-20A = 000765  
FAULT PROG Inc or lit

## I/O DIAGNOSTIC PROGRAM OPERATING PROCEDURE

NOTE: If any common serial I/O channels are to be tested, ensure the zero/one fill option on the type 1/1A card (P/N 90536-7312528) is set to the one-fill mode (reference common serial mode selection instructions pages 39-42 of the Technical Summary.

1. Load I/O Diagnostic
2. Set switches to positions specified

INTERCMPTR TIME OUT	DOWN
GENL DSPL	SET
DISPLAY SELECT CLR	MOMENTARILY PRESSED
BOOTSTRAP 1/2	1
PROGRAM STOP 1/OFF	1
PROGRAM STOP 2/OFF	2
TEST/NORMAL on I/O Mode Sel Card in DPS location 23C	
MA CLR	TEST (LEFT POS) MOMENTARILY PRESSED

3. Set P = 500 Octal
4. Press START
5. Program stops at P = 510
6. Set GR0 through GR13 to I/O channel availability and configuration and RTC Rates as determined by the I/O CHANNEL SELECTION TABLE. (See page 59.)
7. Jumper channels
8. Select P Reg
9. Press START
10. Program stops at P = 001063 (001073 for AN/UYK-20A)
11. FAULT PROG should be lit.
12. Set the TEST/NORMAL switch on I/O Mode Select card in DPS location 23C to NORMAL (right position).

## OPTIONS DIAGNOSTIC PROGRAM OPERATING PROCEDURE

A predetermined series of steps are required to initialize and execute the Options Diagnostic tests 1-6. These options are listed below in the order of execution.

TEST NUMBER	TEST NAME	MAX TIME (SEC)	
		UYK-20	UYK-20A
1	MATH PAC TEST	1	1
2	WORST CASE MEMORY TEST	45	90
3	SHIFTING BIT MEMORY TEST	30	160
4	GENERAL REGISTER GALPAT TEST	1	1
5	PAGE REGISTER GALPAT TEST	2	37
6	I/O CONTROL MEMORY GALPAT TEST	25	25
	Total time approximately:	2 min.	6 min.

1. Load the Options Diagnostic.
2. Initial switch settings.

GENL DSPL	PRESS
DISPLAY SELECT CLR	PRESS
BOOTSTRAP 1/2	1
PROGRAM STOP 1/OFF	1
PROGRAM STOP 2/OFF	2
MA CLR	PRESS

3. Press and observe REGISTER/DATA indicator-switches (P register) = 000500.
4. Press AUTO START/START switch to START.
5. Observe PROG RUN indicator extinguished.
6. Observe REGISTER/DATA indicator-switches (P register) = 000512.
  - a. If correct, perform step 7.
  - b. If incorrect, suspect card is:

LOC	SWAP
A38	A34

The program has reached a parameter stop. If using a preinitialized tape and no parameter changes are to be made, omit steps 7 and 8.

7. Set GR0 and GR1 to establish the appropriate equipment configuration to the program (see following Table).

## EQUIPMENT CONFIGURATION PARAMETERS

GENERAL REGISTER		CONFIGURATION
CP/MEMORY PARAMETERS		
GR0	BIT 0	MATH PAC INSTALLED
	BIT 1	MICRO GROWTH INSTALLED
	BIT 2	GENERAL REGISTER SET 2 INSTALLED
	BIT 3	DMA INSTALLED
GR1	BIT 4-15	NOT USED
	BIT 0-7	MEMORY STACKS INSTALLED

8. Set GR3 and GR4 to select Options tests to be run and memory stack tests on which memory tests are to be run (see Table below).

## OPTIONS TEST SELECTION

GENERAL REGISTER		TEST SELECTED
OPTIONS PARAMETERS		
GR3	BIT 0	MATH PAC TEST
	BIT 1	MEMORY WORST CASE TEST
	BIT 2	MEMORY SHIFTING BIT TEST
	BIT 3	GENERAL REGISTER GALPAT TEST
	BIT 4	PAGE REGISTER GALPAT TEST
GR4	BIT 5	I/O CONTROL MEMORY GALPAT TEST
	BIT 0-7	OPTIONS MEMORY STACKS TO TEST

9. Press GENL DSPL indicator-switch.
10. Press DISPLAY SELECT CLR pushbutton.
11. Press AUTO START/START switch to START.
12. Observe PROG RUN indicator extinguished.
13. Observe REGISTER/DATA indicator switches (P register) = 000520.

The program has reached another parameter stop. If using a preinitialized tape and no parameter changes are to be made, omit step 14.

14. Set GR0 through GR13 corresponding to the IO CHANNEL SELECTION TABLE. (See page 59).
15. Press GENL DSPL indicator-switch.
16. Press DISPLAY SELECT CLR pushbutton.
17. Press AUTO START/START switch to START position.
18. Observe PROG RUN indicator extinguished.
19. Observe REGISTER/DATA indicator switches (P register) = 000552.



## MICRO DIAGNOSTIC WITH END-AROUND JUMPERS OPERATING PROCEDURE

This procedure isolates and corrects malfunctions detected while attempting to bootstrap load diagnostic programs using micro diagnostic procedures.

### NOTE

Test not applicable if load channel is MIL-STD-188C, RS232C, VACALES or NTDS serial type interface.

1. Set POWER LOGIC ON/OFF switch to OFF.
2. Set TEST/NORMAL switch (on card in DPS location 23C) to TEST (left).
3. Disconnect load device from DPS connect output of load channel connector to its own input connector (see Page 24) using test I/O jumper (P/N 90536-7150225-00, 90536-7150226-00, or 90536-7126394-00).

### NOTE

If loading was attempted on a 32-bit parallel channel, connect channel n, and remove dual channel jumper plugs from channel n+4.

4. Set POWER LOGIC ON/OFF switch to ON.
5. Press DISPLAY SELECT CLEAR pushbutton.
6. Press MODE MICRO STEP indicator-switch.
7. Set DIAGNOSTIC DSPL switch to down position.
8. Set DIAGNOSTIC JUMP switch to up position.
9. Press MA CLR pushbutton.
10. Press MODE RUN indicator-switch.
11. Press GENL DSPL indicator-switch.
12. Set DISPLAY NUMBER to octal value of channel on which I/O jumper cable is installed.
13. Press PROG RUN indicator-switch.
14. Press AUTO START/START switch to START four times.
15. Press GENL REG indicator-switch.
16. Press DISPLAY SELECT CLEAR pushbutton.
17. PROG RUN indicator-switch extinguished. REGISTER/DATA = 070707.

I/O CHANNEL SELECTION TABLE FOR I/O DIAGNOSTIC PROGRAM EXECUTION

GENERAL REGISTER	I/O CONFIGURATION	CHANNEL NUMBER															
		17	16	15	14	13	12	11	10	7	6	5	4	3	2	1	0
	SET BITS TO SELECT CHANNELS USED IN EACH CONFIGURATION																
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
GR0	MIL-STD-1987 16-BIT PARALLEL CHANNELS (PIC, NTDS FAST, SLOW & NEW)																
GR1	MIL-STD-1987 32-BIT PARALLEL CHANNELS (DUAL AND DUAL PIC)																
GR2	END-AROUND JUMPED CHANNELS FOR ALL CONFIGURED CHANNELS																
GR3	PARALLEL CHANNELS (SYNC & ASYNC)																
GR4	EIA-STD-RS-232C SERIAL CHANNELS (SYNC & ASYNC)																
GR5	ASYNCHRONOUS CHANNELS (188C AND RS-232C)																
GR6	MIL-STD-1987 NTDS SERIAL, LOW LEVEL SERIAL CHANNELS																
GR7	CHANNELS 1987 ESA CHANNELS																
GR10	MIL-STD-1987 NEW PIC CHANNELS (7132148, Type II)																
GR11	VACALES CHANNELS																
GR12*	INTERNAL 1 KHz -SET BIT 2 RTC RATE 32 KHz -SET BIT 7																
GR13	MIL-STD-1987 OLD PIC CHANNELS (7152115, TYPE II)																

\* 1KHz Clock = 7126200 PCB in location B23  
32KHz Clock = 7137130 PCB in location B23