FIELD MAINTENANCE PRINT SET

TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
MNCKW

MNCKW

Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.

MPØØ593

REVISIONS	REV	CHG. NO.	DATE

USED ON OPTION/MODEL	
MNCKW	

SHEET 1 OF 1

DRN.	B. Noles	DATE 28-FEB-78
CHK'D	[signature]	DATE 9 MAY 78
PROJ. ENG.	A.C. Fahy	DATE 23-May-78
FIELD SERV.	C.L. Williams	DATE 25 May 78

digital

TITLE: MNCKW UNIT ASSY

SIZE	CODE	NUMBER	REV.
B	TC	MNCKW-Ø-1	

DIST.

DRAWING DIRECTORY

UNIT VARIATIONS

VAR	TITLE
MNCKW	MNCKW UNIT ASSY

REVISIONS		
REV.	CHANGE NO.	CHK
A	MNCKW - 1	SB
B	MNCKW-2	FH

USED ON OPTION/MODEL

MNCKW

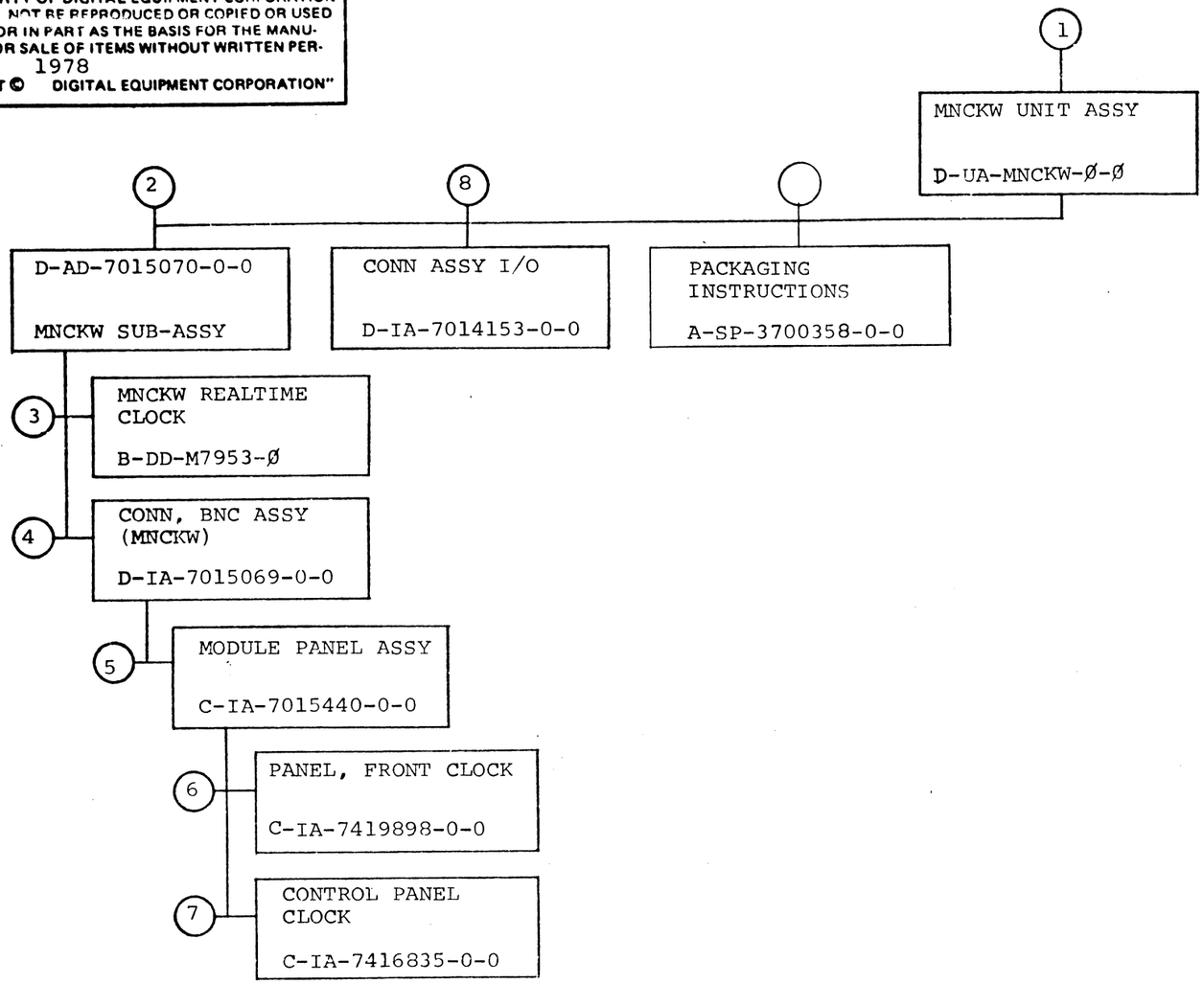
SHEET 1 OF 3

DRN. M. Archie	DATE 29Dec77	TITLE: MNCKW UNIT ASSY
CHK'D. L Hallisey	DATE 13Feb78	
PROJ. ENG. A. C. Fb	DATE 3/21/78	
PROD.	DATE 3/[illegible]/79	

digital

SIZE	CODE	NUMBER	REV
B	DD	MNCKW-Ø	B

DIST.



TITLE		SIZE	CODE	NUMBER	REV
MNCKW UNIT ASSY	SHEET 2 OF 3	B	DD	MNCKW-Ø	B

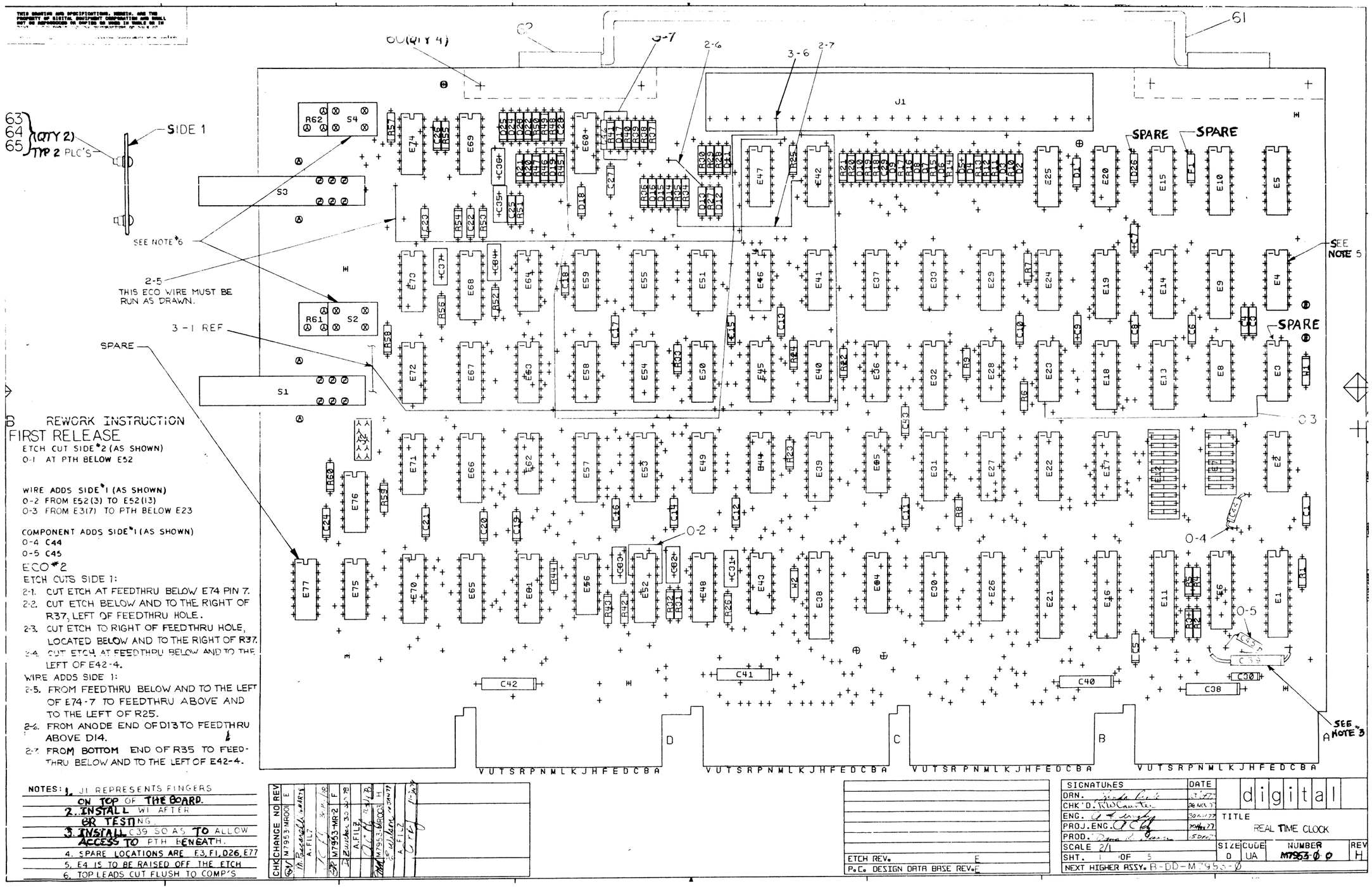
FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
1	MPØØ593	FIELD MAINTENANCE PRINT SET	-
	B-TC-MNCKW-Ø-1	FIELD MAINTENANCE PRINT SET	-
	D-UA-MNCKW-Ø-Ø	MNCKW UNIT ASSY	E/M
	C-MD-7419869-0-0	PLATE, COMP SIDE	M
	C-MD-7419868-0-0	PLATE, ETCH SIDE	M
	A-DC-3615260-0-0	DECAL, I/O SCHEMATIC	E/M
	A-DC-3615264-0-0	DECAL, INFORMATION (MNCKW)	E/M
	A-PL-MNCKW-Ø-5	PARTS LIST MNCKW	E/M
	A-PL-MNCKW-Ø-SH	SHIP LIST MNCKW	E/M
	A-SP-MNCKW-Ø-2	MNCKW ENGINEERING SPEC.	E/M
	A-SP-MNCKW-Ø-3	CHECKOUT & ACCEPTANCE PROCEDURE	E/M
	A-SP-MNCKW-Ø-4	INSTALLATION & ACCEPTANCE PROCEDURE	E/M
2	D-AD-7015070-0-0	MNCKW SUB-ASSY	E/M
	B-MD-7420242-0-0	SPACER, MODULE	M
	C-IA-7419861-0-0	SUB-PANEL	M
	B-IA-7420635-0-0	BUTTOM SWITCH (MODIFIED)	M
3	B-DD-M7953-Ø	MNCKW REALTIME CLOCK	E/M
	A-PL-M7953-Ø-Ø	REAL TIME CLOCK	E/M
	D-UA-M7953-Ø-Ø	REAL TIME CLOCK	E/M
	D-CS-M7953-Ø-1	REAL TIME CLOCK	E/M
4	D-IA-7015069-0-0	CONN, BNC ASSY (MNCKW)	E/M
5	C-IA-7015440-0-0	MODULE PANEL ASSY	E/M
6	C-IA-7419898-0-0	PANEL, FRONT CLOCK	M
	C-PS-4830032-0-0	EXTRUSION, FRONT PANEL "D"	M
7	C-IA-7416835-0-0	CONTROL PANEL CLOCK	M
	C-SS-7416835-01	CONTROL PANEL	M
	C-SS-7416835-02	CONTROL PANEL	M
	C-SS-7416835-03	CONTROL PANEL	M
	C-SS-7416835-04	CONTROL PANEL	M
	C-SS-7416819-02	CONTROL PANEL	M
8	D-IA-7014153-0-0	CONN ASSY I/O	E/M
	A-DC-7416886-0-0	DECAL, I/O CONN	E/M
	A-DC-7418934-4-0	DECAL, I.D. I/O CONN	E/M
9	A-SP-3700358-0-0	PACKAGING INSTRUCTIONS	M

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE MNCKW UNIT ASSY

SHEET 3 OF 3 | SIZE B | CODE DD | NUMBER MNCKW-Ø | REV B



B REWORK INSTRUCTION
FIRST RELEASE
ETCH CUT SIDE #2 (AS SHOWN)
0-1 AT PTH BELOW E52

WIRE ADDS SIDE #1 (AS SHOWN)
0-2 FROM E52(3) TO E52(13)
0-3 FROM E31(7) TO PTH BELOW E23

COMPONENT ADDS SIDE #1 (AS SHOWN)
0-4 C44
0-5 C45

ECO #2
ETCH CUTS SIDE 1:
2-1. CUT ETCH AT FEEDTHRU BELOW E74 PIN 7.
2-2. CUT ETCH BELOW AND TO THE RIGHT OF R37, LEFT OF FEEDTHRU HOLE.
2-3. CUT ETCH TO RIGHT OF FEEDTHRU HOLE, LOCATED BELOW AND TO THE RIGHT OF R37.
2-4. CUT ETCH AT FEEDTHRU BELOW AND TO THE LEFT OF E42-4.

WIRE ADDS SIDE 1:
2-5. FROM FEEDTHRU BELOW AND TO THE LEFT OF E74-7 TO FEEDTHRU ABOVE AND TO THE LEFT OF R25.
2-6. FROM ANODE END OF D13 TO FEEDTHRU ABOVE D14.
2-7. FROM BOTTOM END OF R35 TO FEEDTHRU BELOW AND TO THE LEFT OF E42-4.

NOTES:
1. J1 REPRESENTS FINGERS ON TOP OF THE BOARD.
2. INSTALL W1 AFTER SR TESTING.
3. INSTALL C39 SO AS TO ALLOW ACCESS TO PTH BENEATH.
4. SPARE LOCATIONS ARE E3, F1, D26, E77
5. E4 IS TO BE RAISED OFF THE ETCH
6. TOP LEADS CUT FLUSH TO COMP'S

CHK	CHANGE NO	REV
GV	M7953 MROOI	E
	M7953-MR-2	F
	M7953 MROO3	H

ETCH REV. E
P.C. DESIGN DATA BASE REV. E

SIGNATURES	DATE
DRN.	
CHK'D.	28 NOV 77
ENG.	30 NOV 77
PROJ.ENG.	30 Nov 77
PROD.	5 Dec 77

digital

TITLE: REAL TIME CLOCK

SIZE	CODE	NUMBER	REV
D	UA	M7953-00	H

SCALE 2/1
SHT. 1 OF 5
NEXT HIGHER ASSY. B-DD-M7953-0

REWORK INSTRUCTIONS CONTINUED

ECO #3

ETCH CUT, SIDE 1, AS SHOWN

3-1 CUT ETCH FROM J2-7 AT A POINT ABOVE S2.
3-2 CUT ETCH TO THE LEFT OF UPPER MOUNTING HOLE OF R30

ETCH CUT, SIDE 2, AS SHOWN

3-3 CUT ETCH FROM THE UPPER MOUNTING HOLE FOR R47 TO THE FEED THRU ABOVE
3-4 CUT ETCH BENEATH J1-5

WIRE ADD SIDE 1

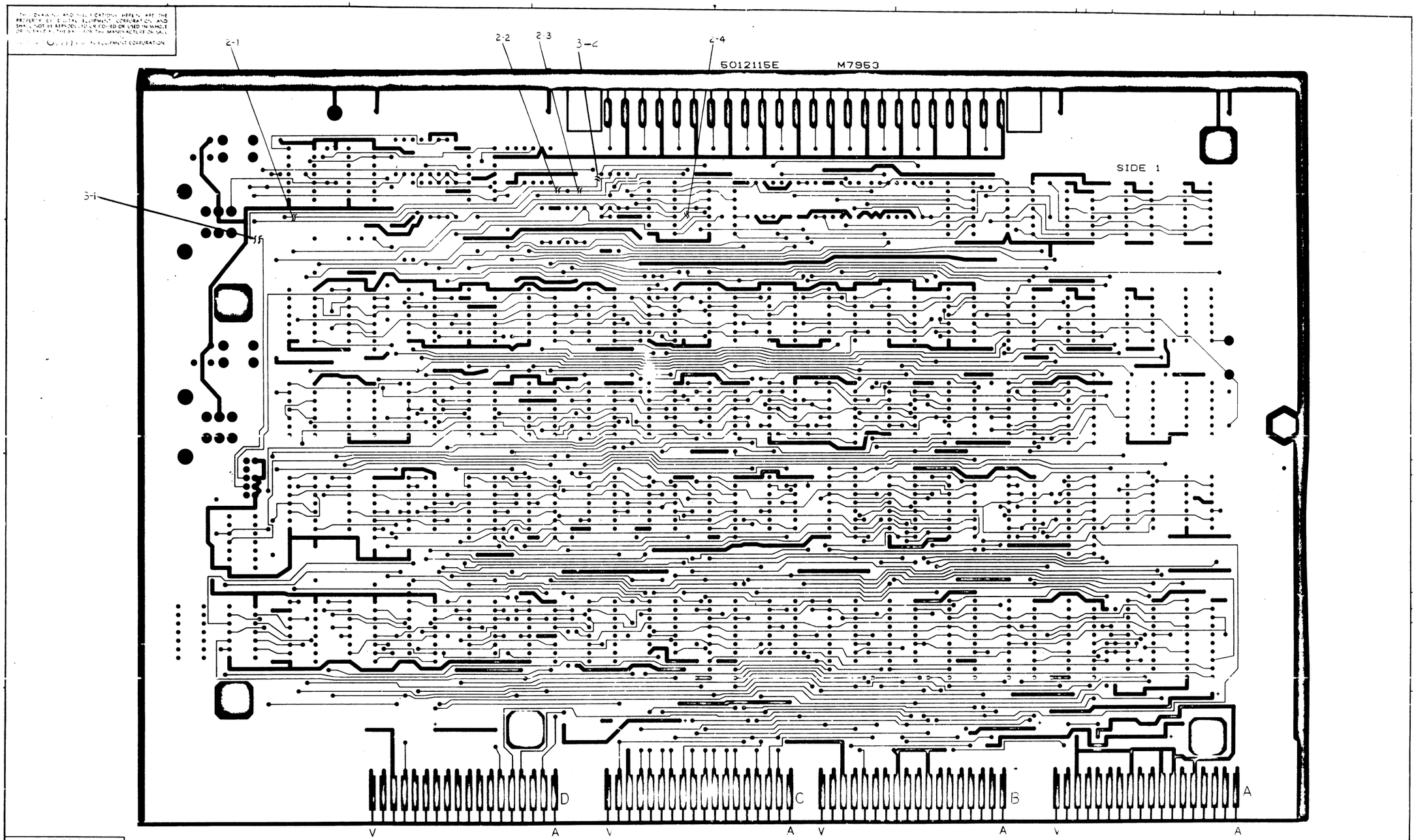
3-5 FROM FEED THRU ABOVE AND TO THE LEFT OF E47 TO THE ETCH BELOW ETCH CUT 3-1 ROUTE AS SHOWN TO THE AREA BELOW S2.
3-6 ADD WIRE FROM FEED THRU BELOW J1-5 TO UPPER MOUNTING HOLE FOR R47 ROUTE WIRE AS SHOWN

COMPONENT ADD, SIDE 1, AS SHOWN

3-7 ADD C46 10PF CAP ACROSS R40

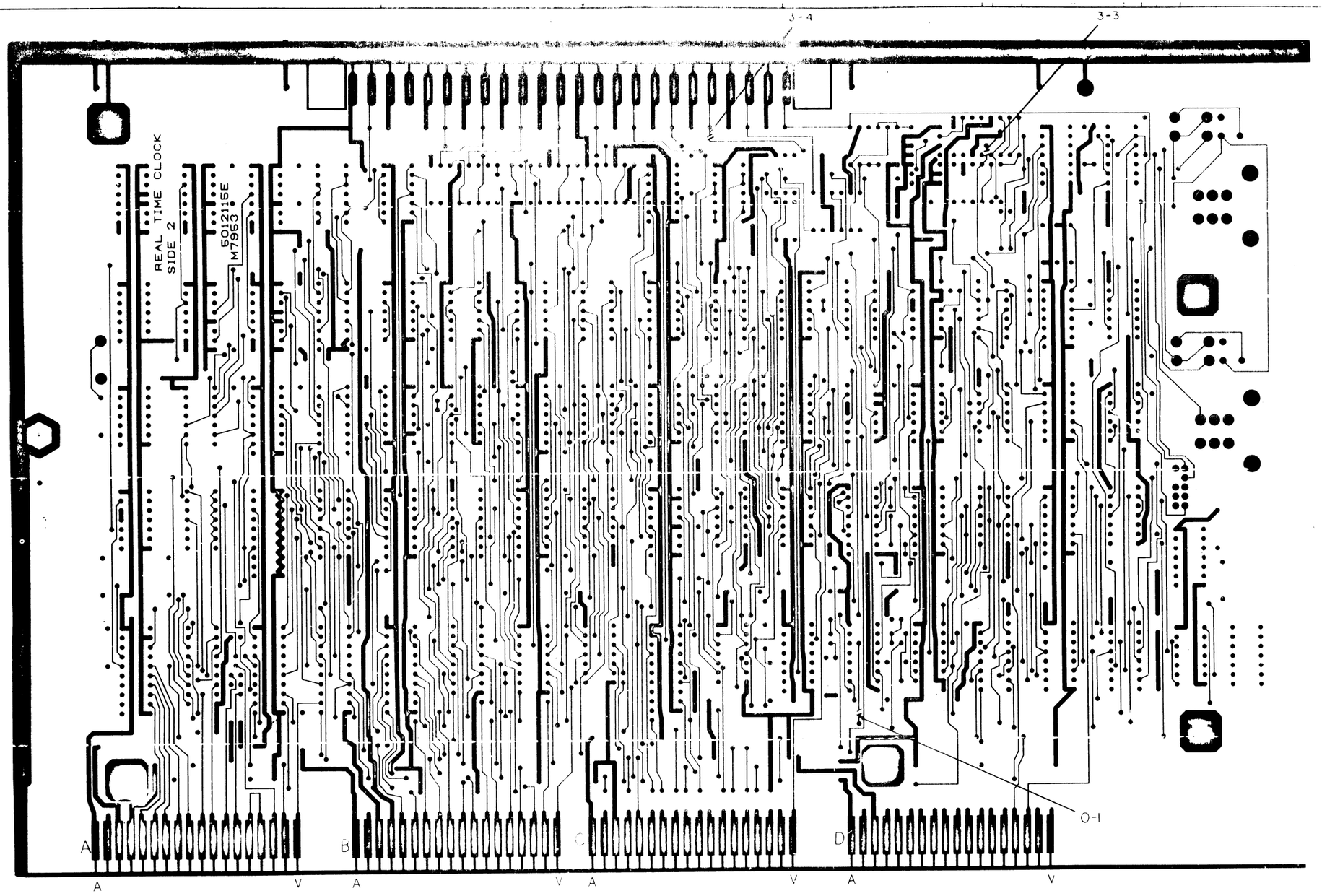
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	UA	M7953-Ø-Ø	H
SCALE 2/1 SHEET 2 OF 5	DIST.			



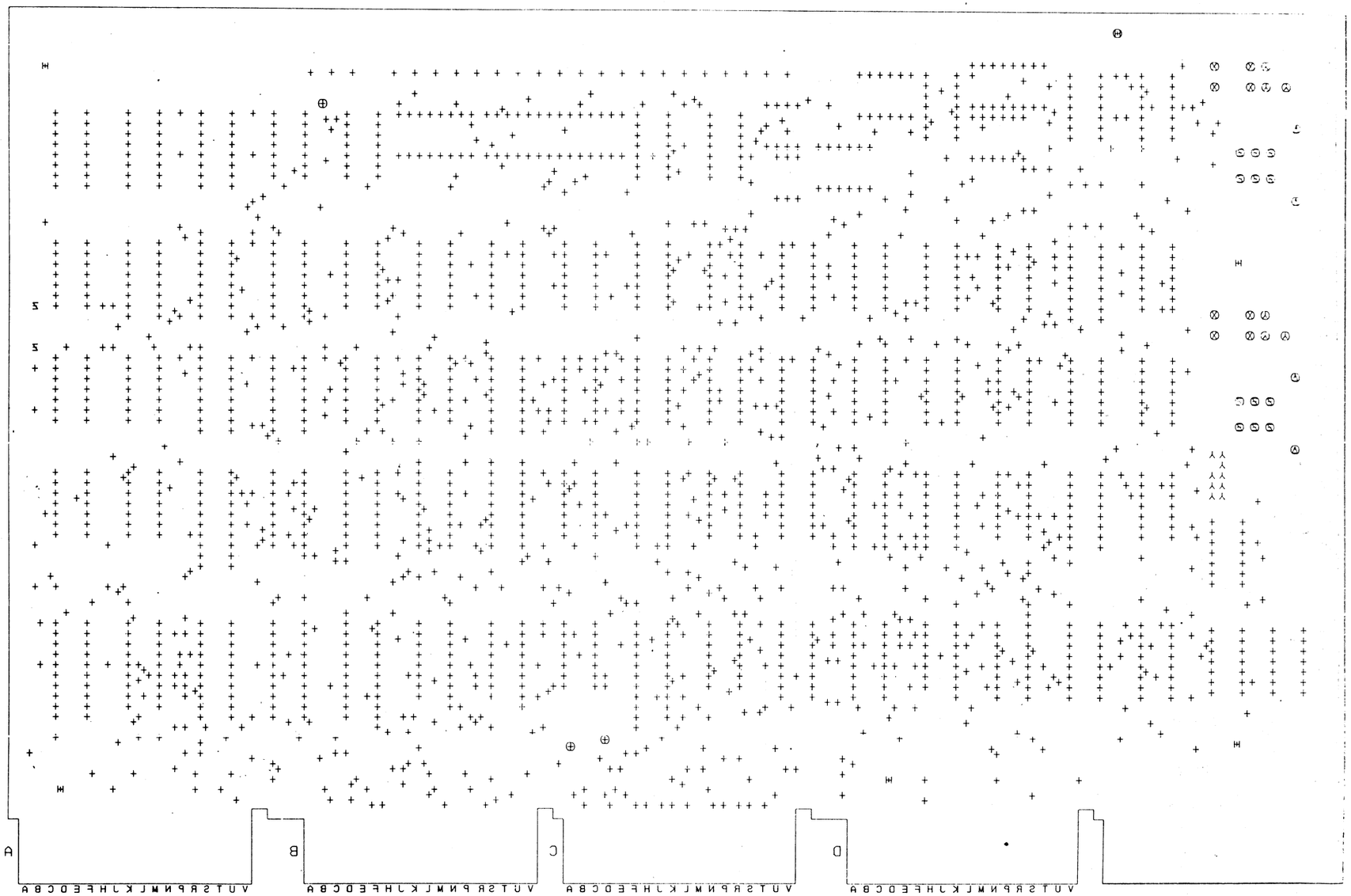
REVISIONS		
CHK	CHANGE NO	REV

TITLE	REAL TIME CLOCK	SIZE / CODE	D UA M7953-0-0
SCALE	2/1	SHEET	3 OF 5
NUMBER		REV	H
DIST			



REVISIONS		
CHK	CHANGE NO	REV

TITLE	REAL TIME CLOCK	SIZE / CODE	NUMBER / REV
		D UA	M7953 Ø-Ø H
SCALE 2/1	SHEET 4 OF 5	DOC	



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	REAL TIME CLOCK	SIZE / CODE	D UA M7953-0-0
SCALE	2/1	SHEET	5 OF 5
DIST		NUMBER	REV H

LINE	ITEM	DOCUMENT NO.	PART NO.	DESCRIPTION		QTY	REFERENCE DESIGNATORS
1	1	D-MD-5012115-0-0	5012115-00	M7953		1	
2	2		1012704-00	.047 MFD 50V -20+80 CER		30	C1,C3-C30,C43
3	3		1000014-00	68.0 MMF 100V 50200PPM DM15B	(10-00	1	C31
4	4		1000021-00	220.0 MMF 100V 50200PPM DM15B	(10-00	6	C32-C37
5	5		1004012-00	15 MFD 20V 10% S.TANT	(10-00	5	C38-C42
6	6		1000019-00	150.0 MMF 100V 50200PPM DM15B	(10-00	2	C44,C45
7	7		1105796-00	1N 4004 PIV=400 Io 1A D041 SP		16	D1-D15,D18
8	8		1100114-00	D 664 CO\76PCB PIV= 25V SP		8	D16,D17,D19-D21,D23-D25
9	9		1110232-00	MCL1304 CL06MA FROM10-00V		1	D22
10	10		1300365-00	1 K 1/4W 5% CC	(13-00	23 CONT	R1,R6-R9,R18,R21-R25,R31,R33, R41-R43,R49,R55-R60
11	11		1301424-00	680 1/4W 5% CC	(13-00	2	R2,R4
12	12		1300295-00	330 1/4W 5% CC	(13-00	2	R3,R5
13	13		1310881-02	47 1/4W 1% FUSIBLE		8 CONT	R10,R12,R13,R16,R19,R29,R30, R34
14	14		1300316-00	470 1/4W 5% CC	(13-00	7	R11,R14,R15,R17,R20,R28,R35
15	15		1301074-00	5.6 K 1/4W 5% CC	(13-00	2	R26,R32
16	16		1301424-00	7.5 K 1/4W 5% CC	(13-00	3	R44,R52,R54
17	17		1302300-00	2 K 1/4W 5% CC	(13-00	3	R27,R36,R46
18	18		1302460-00	100 K 1/4W 5% CC	(13-00	2	R37,R47
19	19		1309595-00	1 M 1/4W 5% CC	(13-00	2	R38,R48
20	20		1300436-00	2.7 K 1/4W 5% CC	(13-00	2	R51,R53
21	21		1314365-00	50 K POT		2	R61,R62
22	22		1011660-01	OSCILLATOR, CRYSTAL 10 MHZ	14PI	1	E4
23	23		1211164-03	SW,DIP 1P 1A 7POS		1	E7
24	24		1211164-06	SW,DIP 1P 1A 10POS		1	E12
25	25		1213480-00	CONN 10POS HOUSING		1	J2
26	26		1214937-00	SW,PB 2P PUSH PUSH		2	S1,S3
27	27		1912729-00	DC 004 PROTOCOL,REG, SELECTOR		1	E1
28	28		1912024-00	LS74 DP-D DUAL,EDGE TRIGGER,POS		9	E2,E29,E40,E42,E44,E49,E50,

REVISION HISTORY			VARIATIONS FOR THIS ASSY.
CHK	ECO NO	REV	
			00
RWC	INIT	D	
RWC	MR001	E	
EK	MR002	F	
MN	MR003	H	

FIRST USED ON:

MADE BY:	E.WILSON	DATE: 28-NOV-77
CHECKED:	R.W.CAUNTER	DATE: 28-NOV-77
DSN.ENG.:	A.ARRIGHI	DATE: 30-NOV-77
PROD.:	D.DUNCAN	DATE: 15-DEC-77
RESP.ENG.:	A.PAGE	DATE: 30-NOV-77

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

TITLE
PARTS LIST

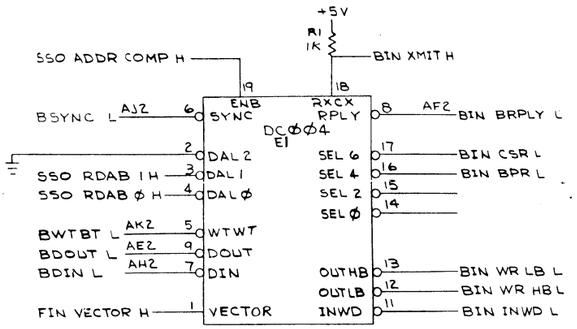
REAL TIME CLOCK

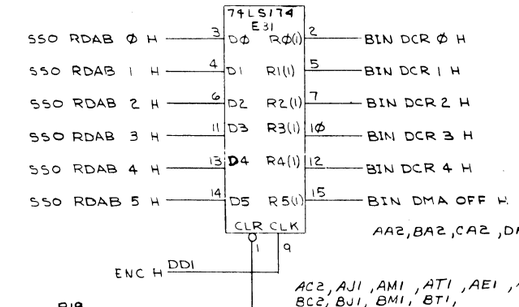
SIZE	CODE	DOCUMENT NUMBER	REV
K	PL	M7953-0-DBP	H
ASSY.NO.: D-UA-M7953-0-0			EDIT# 10

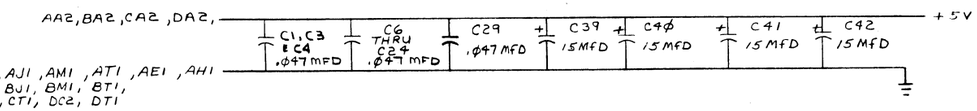
LINE	ITEM	DOCUMENT NO.	PART NO	DESCRIPTION		QTY	REFERENCE DESIGNATORS
						CONT	E71,E72
29	29		1914127-00	74LS190 COUNTER,SYNCHR UP/DOWN		5	E5,E9,E10,E14,E15
30	30		1912730-00	DC 003 INTERRUPT,2 CIRCUIT		1	E6
31	31		1912799-00	L800 NAND-GATE-QUAD 2IN,POSITIVE		4	E8,E25,E37,E75
32	32		1913040-00	DC 005 TRANSCEIVER 8BIT		4	E11,E16,E21,E38
33	33		1912867-00	LS298 MUX 1 OF 4,2IN W/STORAGE		4	E13,E27,E57,E65
34	34		1912647-00	LS257 MUX 1 OF 2 (QUAD) TRI-STA		4	E17,E30,E39,E61
35	35		1912854-00	LS193 COUNTER,SYNCHR,4BIT,UP/DN,BINA		4	E18,E22,E53,E66
36	36		1912844-00	LS151 MUX 1 OF 8 & DATA SELECTOR		1	E19
37	37		1909705-00	DEC 8881 NAND GATE-QUAD 2IN OPN COLL		2	E20,E47
38	38		1911469-00	DEC 8640 RECEIVER,BUS,QUAD,UNIBUS,Q-BU		1	E23
39	39		1910532-00	74800 NAND GATE-QUAD 2ING		1	E24
40	40		1910550-00	746174 FF-D HEX		1	E26
41	41		1912803-00	L804 INVERTER GATE-HEX 1IN		3	E28,E34,E50
42	42		1912847-00	LS157 MUX 1 OF 2(QUAD)		1	E32
43	43		1912801-00	L802 NOR-GATE-QUAD 2IN		5	E33,E41,E55,E63,E64
44	44		1912807-00	L810 NAND GATE-TRIPLE 3IN		1	E35
45	45		1910537-00	74811 AND GATE-TRIPLE 3INPUT		1	E36
46	46		1910155-00	DEC 7408 AND GATE,POS,QUAD 2IN	14	1	E43
47	47		1912805-00	L808 AND GATE-QUAD 2IN,POSITIVE		2	E45,E62
48	48		1909806-00	7404 INVERTER GATE-HEX 1IN		2	E46,E67
49	49		1910951-00	9602 ONE SHOT-DUAL		3	E48,E52,E68
50	50		1912816-00	L832 OR GATE-QUAD 2IN,POSITIVE		2	E51,E58
51	51		1910544-00	74874 FF-D DUAL,EDGE TRIGGER		2	E54,E59
52	52		1912108-00	339 VOLT CMPRTR,QUAD		1	E60
53	53		1911324-00	7414 INVERTER,HEX 1IN SCHMITT TRIGG		2	E69,E76
54	54		1912846-00	LS155 DECODER,2 OF 4(DUAL) & DEMUX		1	E70
55	55		1909930-00	7405 INVERTER GATE-HEX 1IN,OPEN COL		1	E73
56	56		1912829-00	LS86 X-OR GATE-QUAD 2IN		1	E74
57	57		1912697-00	LS174 FF-D HEX W/CLEAR		1	E31
58	58		9009165-00	JUMPER, WIRE, INSULATED, BLACK BAND		2	W1,W2
59	59		9006735-00	EYELET, FUNNEL FLANGE, .059 OD X .187 LG		2	
60	60		9006732-00	EYELET, ROLLED FLANGE, .121 OD X .219 LG		4	
61	61	C-MD-7420191-0-0	7420191-00	HANDLE		1	
62	62	C-MD-7420192-0-0	7420192-00	HANDLE RETAINER		2	
63	63		9006000-01	SCREW,PAN,SLOT, 2-56X 3/16 SS/PAS		4	
64	64		9006555-00	NUT,HEX , 2-56X3/16AF X 1/16 THK SS/		4	
65	65		9006666-00	WASHER, LOCK, S.S. #2		4	
66	66		1313596-00	20 K 1/4W 1% RN55D-F 100PPM	(13-00	4	R38,R39,R45,R50
67	67		9107256-11	TUBING,THIN WALL,.032ID UL	(91-00	A/R	
68	68		1000006-00	10.0 MMF 100V 50200PPM DM15S	(10-00	1	C46

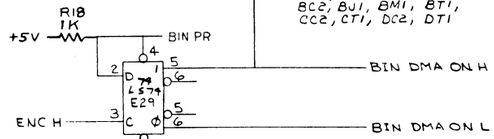
	TITLE	SIZE	CODE	DOCUMENT NUMBER	REV
DIGITAL EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS	PARTS LIST REAL TIME CLOCK	K	PL	M7953-0-DBP	H

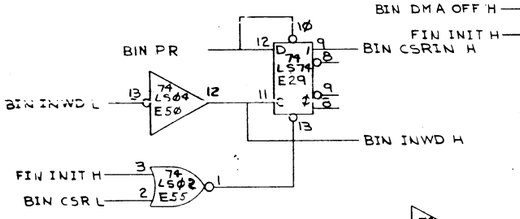
NOTES:
1. C2 IS AN UNUSED DESIGNATION

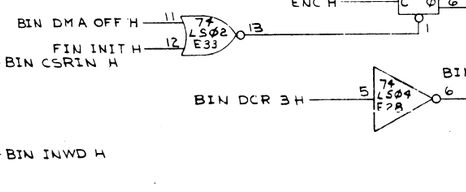


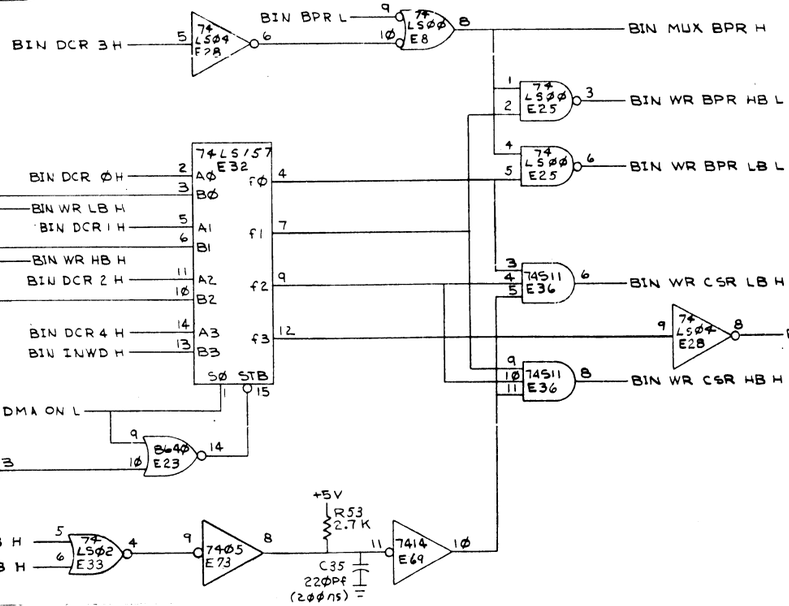


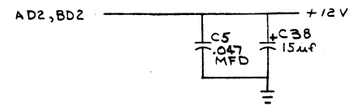












REVISIONS			
CHK	CHANGE NO.		REV.
[illegible]	M7953-MR0001	16 MAY 75	E
	M7953-MR0002		F
	M7953-MR0003	17 JULY 76	H

BUS INTERFACE (BIN)

DRN. G. FLANDERS	6 OCT 76	FIRST USED ON MNCKW	digital
CHK'D R W Conklin	7 OCT 76		
ENG. [illegible]	30 NOV 77	TITLE REAL TIME CLOCK	
PROJ. ENG. [illegible]	30 NOV 77		
PROD. [illegible]	15 DEC 77		
NEXT HIGHER ASSY. B-DD-M7953-Ø		SIZE D	CODE CS	NUMBER M7953-Ø-1	REV. H
SCALE		DIST.			
SHEET 1 OF 6					

SSO RDAB 10 H — 74LS04 E34 (9 → 8) — SSO RDAB 10 L

SSO RDAB 12 H — 74LS04 E34 (1 → 2) — SSO RDAB 12 L

SSO RDAB 15 H — 74LS04 E34 (3 → 4) — SSO RDAB 15 L

SSO RDAB 7 H — 74LS04 E34 (5 → 6) — SSO RDAB 7 L

E12 (1 → 20)
- 2 → 19 — A2
- 3 → 18 — A3
- 4 → 17 — A5
- 5 → 16 — A6
- 6 → 15 — A7
- 7 → 14 — A8
- 8 → 13 — A9
- 9 → 12 — A10
- 10 → 11 — A11

E7 (1 → 14)
- FIN VECTOR H
- 2 → 13 — V4
- 3 → 12 — V5
- 4 → 11 — V6
- 5 → 10 — V7
- 6 → 9 — V8
- 7 → 8

BDAL 15 L — BV2 (8) — BUS 3 — DAT 3 (6) — SSO RDAB 15 H
BDAL 12 L — BS2 (9) — BUS 2 — DAT 2 (7) — SSO RDAB 12 H
BDAL 11 L — BR2 (11) — BUS 1 — DAT 1 (17) — SSO RDAB 11 H
BDAL 14 L — BU2 (12) — BUS Ø — DAT Ø (18) — SSO RDAB 14 H

DC005 E38
- +5V → JA 3 (19)
- * W2 → JA 2 (2)
- A11 → JA 1 (1)
- MENB (13)
- JAV 3 (16)
- JAV 2 (15)
- JAV 1 (14)
- MATCH (3) — SSO ADDR COMP H
- XMIT (5) / REC (4)

BIN XMIT H → 7408 E43 (9, 10 → 8)
BIN INWD L → 7408 E43 (4)
BIN DMA ON L → 7408 E43 (5) → (6)

DC005 E21
- BDAL 10 L — BP2 (8) — BUS 3 — DAT 3 (6) — SSO RDAB 10 H
- BDAL 9 L — BN2 (9) — BUS 2 — DAT 2 (7) — SSO RDAB 9 H
- BDAL 8 L — BM2 (11) — BUS 1 — DAT 1 (17) — SSO RDAB 8 H
- BDAL 13 L — BT2 (12) — BUS Ø — DAT Ø (18) — SSO RDAB 13 H
- A10 → JA 3 (19)
- A 9 → JA 2 (2)
- A 8 → JA 1 (1)
- MENB (13)
- JAV3 (16)
- JAV2 (15)
- JAV1 (14)
- V 8 → MATCH (3)
- XMIT (5) / REC (4)

DC005 E16
- BDAL 7 L — BL2 (8) — BUS 3 — DAT 3 (6) — SSO RDAB 7 H
- BDAL 6 L — BK2 (9) — BUS 2 — DAT 2 (7) — SSO RDAB 6 H
- BDAL 5 L — BJ2 (11) — BUS 1 — DAT 1 (17) — SSO RDAB 5 H
- BDAL 1 L — AV2 (12) — BUS Ø — DAT Ø (18) — SSO RDAB 1 H
- A 7 → JA 3 (19)
- A 6 → JA 2 (2)
- A 5 → JA 1 (1)
- BIN DMA ON H → MENB (13)
- V 7 → JAV 3 (16)
- V 6 → JAV 2 (15)
- V 5 → JAV 1 (14)
- MATCH (3)
- XMIT (5) / REC (4)

DC005 E11
- BDAL 4 L — BH2 (8) — BUS 3 — DAT 3 (6) — SSO RDAB 4 H
- BDAL 3 L — BF2 (9) — BUS 2 — DAT 2 (7) — SSO RDAB 3 H
- BDAL 2 L — BE2 (11) — BUS 1 — DAT 1 (17) — SSO RDAB 2 H
- BDAL Ø L — AU2 (12) — BUS Ø — DAT Ø (18) — SSO RDAB Ø H
- A4 → JA 3 (19)
- A3 → JA 2 (2)
- A2 → JA 1 (1)
- BBS7 L — AP2 (13) — MEN B
- V4 → JAV 3 (16)
- V3 → JAV 2 (15)
- FIN VEC 2 H → JAV 1 (14)
- MATCH (3)
- XMIT (5) / REC (4)

74LS257 E3Ø
- BPC BPR 3 H — CSR RATE Ø H — B3 (13), A3 (14) — f3 (12) CCI — SSO RDAB 3 H
- BPC BPR 2 H — CSR MODE 1 H — B2 (10), A2 (11) — f2 (9) CHI — SSO RDAB 2 H
- BPC BPR 1 H — CSR MODE Ø H — B1 (6), A1 (5) — f1 (7) CKI — SSO RDAB 1 H
- BPC BPR Ø H — CSR GO H — BØ (3), AØ (2) — fØ (4) DFI — SSO RDAB Ø H
- OUT CONT (15) / SØ (1)

BIN MUX ON L
BIN MUX BPR H

74LS257 E17
- BPC BPR 7 H — CSR OVFLOFLAB H — B3 (13), A3 (14) — f3 (12) CPI — SSO RDAB 7 H
- BPC BPR 6 H — FIN INTOV H — B2 (10), A2 (11) — f2 (9) CMI — SSO RDAB 6 H
- BPC BPR 5 H — CSR RATE 2 H — B1 (6), A1 (5) — f1 (7) CSI — SSO RDAB 5 H
- BPC BPR 4 H — CSR RATE 1 H — BØ (3), AØ (2) — fØ (4) DEI — SSO RDAB 4 H
- OUT CONT (15) / SØ (1)

74LS257 E39
- BPC BPR 11 H — CSR DIS INT OSC H — B3 (13), A3 (14) — f3 (12) CRI — SSO RDAB 11 H
- BPC BPR 10 H — CSR STIFLAB H — B2 (10), A2 (11) — f2 (9) CDI — SSO RDAB 10 H
- BPC BPR 9 H — B1 (6), A1 (5) — f1 (7) CBI — SSO RDAB 9 H
- BPC BPR 8 H — BØ (3), AØ (2) — fØ (4) CFI — SSO RDAB 8 H
- OUT CONT (15) / SØ (1)

74LS257 E61
- BPC BPR 15 H — CSR ST2FLAB H — B3 (13), A3 (14) — f3 (12) CNI — SSO RDAB 15 H
- BPC BPR 14 H — FIN INT ST EN H — B2 (10), A2 (11) — f2 (9) CUI — SSO RDAB 14 H
- BPC BPR 13 H — CSR ST2 GO ENABLE H — B1 (6), A1 (5) — f1 (7) CJI — SSO RDAB 13 H
- BPC BPR 12 H — CSR FOR H — BØ (3), AØ (2) — fØ (4) CLI — SSO RDAB 12 H
- OUT CONT (15) / SØ (1)

* STANDARD ADDRESS WITH W2 INSERTED IS 17XXXX
REMOVE W2 FOR ADDRESS 16XXXX

REVISIONS		
CHK	CHANGE NO.	REV.

TRANSCEIVERS & OUT, MUX (SSO)

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	CS	M7953-Ø-1	H
SCALE —	SHEET 2 OF 6	DIST.		

ST SET ST2 L
CSR ST2 GO ENABLE L
74 LS32 E58
SSO RDAB Ø H
BIN WR CSR LB H
74 LS08 E62
CSR MØ L
BPC SET OVFLO L
74 LS32 E51
FIN INIT L
74 LSØ8 E45
74 LS74 E56
CSR GO L
74 LSØ4 E28
CSR GO H

+5V
R23 1K
CSR DIS INT OSC H
SSO RDAB 11H
74 LS74 E44
CSR DIS INT OSC L
BIN WR CSR HB H
FIN INIT L
7408 E43
CSR MAINT OSC H

74S174 E26
SSO RDAB 5 H
SSO RDAB 4 H
SSO RDAB 3 H
SSO RDAB 2 H
SSO RDAB 1 H
D5 D4 D3 D2 D1 DØ
R5(1) R4(1) R3(1) R2(1) R1(1) RØ(1)
CLR CLK
CSR RATE 2 H
CSR RATE 1 H
CSR RATE Ø H
CSR GO H
FIN INIT L
BIN WR CSR LB H

STBB STBA 74LS155 E70
DB DA
FB3 FB2 FB1 FBØ FA3 FA2 FA1 FAØ
1C 2C
CSR M3 L
CSR M2 L
CSR M1 L
CSR MØ L
CSR MODE 1 H
CSR MODE Ø H

SSO RDAB 9 H
BIN WR CSR HB H
SSO RDAB 8 H
74 LS08 E62
CSR ST2 SIM H
CSR ST1 SIM H

CSR M2 L
CSR PS ST1 L
74 LS02 E55
74 LS02 E64
CSR M3 L
BPC CLK BPR LB L
74 LS02 E41
74 LSØ8 E8
CSR GO H
CSR GO 2 L
74 LSØ4 E28
CSR GO 2 H

ST SET ST2 L
CSR ST2 FLAG L
74S74 E54
74 LSØ4 E67
DT2 DMA FLAG H
74 LSØ4 E50
CSR ST2 FLAG H
BIN INWD H
74 LS74 E49
CSR ST2 FLAB H
CSR ST2 FLAB L
+5V
R33 1K

BIN CSRIN H
CSR ST2 FLAB L
74 LSØØ E37
74 LS10 E35
BIN WR CSR HB H
SSO RDAB 15 L
FIN INIT L
74 LS08 E45

BPC SET OVFLO L
CSR OVFLO FLAG L
CSR OVFLO FLAG H
R22 1K +5V
74S74 E54
74 LSØ4 E50
BIN INWD H
74 LS74 E40
CSR OVFLOFLAB H
CSR OVFLOFLAB L

BIN CSRIN H
CSR OVFLOFLAB L
SSO RDAB 7L
BIN WRCSR LB H
74 LSØØ E37
74 LS10 E35
CSR GO1 INIT L
74 LS08 E45

CSR RATE 2 H
CSR RATE 1 H
CSR RATE Ø H
74 LSØØ E8
ST SET ST1 L
74 LS02 E33
74 LS32 E51
CSR PS ST1 L
+5V
R21 1K
74S74 E59
CSR ST1 FLAG L
74 LS09 E50
CSR ST1 FLAG H
BIN INWD L
74 LS74 E42
CSR ST1 FLAB H
CSR ST1 FLAB L

+5V
C32 220PF
R32 5.6K
CSR GO L
74S02 E52 500NS
CSR GO 1 TR H
CSR GO 1 TR L
FIN INIT L

+5V
R43 1K
SSO RDAB 13 H
BIN WR CSR HB H
74 LS74 E56
CSR ST2 GO ENABLE H
CSR ST2 GO ENABLE L
CSR GO1 TR L
FIN INIT L
7408 E43
CSR GO1 INIT L

BIN WR CSR HB H
FIN INIT H
BIN CSRIN H
CSR ST1 FLAB L
74 LSØØ E37
74S11 E36
74 LS02 E63
SSO RDAB 10 L

FIN SET ISA L
CSR ISA H
+5V
R24 1K
74S74 E59
CSR ISA L
74 LS74 E40
CSR FOR H
CSR FOR L
BIN INWD H

BIN CSRIN H
CSR FOR L
BIN WR CSR HB H
SSO RDAB 12 L
74 LSØØ E37
74 LS10 E35
CSR GO1 INIT L
74 LS08 E45

CONTROL AND STATUS REGISTER (CSR)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	CS	M7953-Ø-1	H
SCALE	SHEET 3 OF 6		DIST.	

NOTES:
1. J1 CONSISTS OF FINGERS FOR ATTACHING A SCREW TERMINAL CONNECTOR.
2. J2 CONNECTOR IS FOR FRONT PANEL CABLES.

ST STI IN
ST LEVEL 1
ST STI SLOPE SWITCH (CLOSE = +)
ST STI SYNC H
ST TTL REF
CSR STI SIM H
ST SET STI H
ST SET STI L
ST STI OUT L
ST STI L

ST ST2 IN
ST LEVEL 2
ST ST2 SLOPE SWITCH (CLOSE = +)
CSR ST2 SIM H
ST SET ST2 H
ST SET ST2 L
ST ST2 OUT L

FIN INIT L
FIN 1 MHZ L
FIN 2 MHZ H
CSR GO H
CSR GO L
ST SET STI H

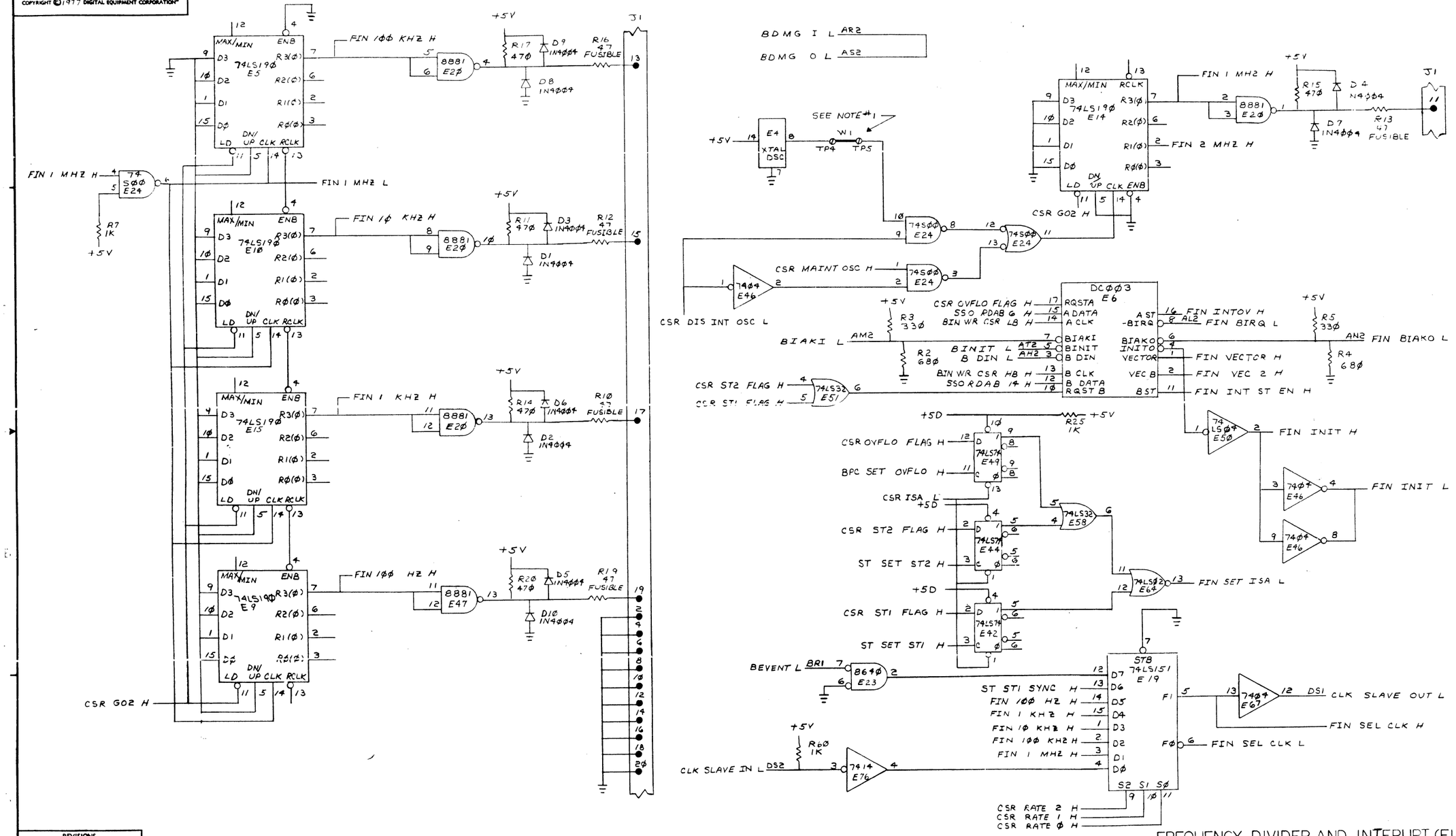
* S2, S4 SHOWN SHAFT EXTENDED ("VARIABLE" POSITION)

REVISIONS		
CHK	CHANGE NO.	REV.

SCHMITT TRIGGERS (ST)

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	CS	M7953-Ø-1	H
SCALE	SHEET 4 OF 6	DIST.		

NOTES:
1. INSTALL W1 AFTER GR. TEST.



REVISIONS		
CHK	CHANGE NO.	REV.

FREQUENCY DIVIDER AND INTERUPT (FIN)

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	CS	M7953-0-1	H
SCALE 1=1	SHEET 5 OF 6	DIST.		

74LS298 E57
SSO RDAB Ø H
BPC CTR Ø H
SSO RDAB 1 H
BPC CTR 1 H
SSO RDAB 2 H
BPC CTR 2 H
SSO RDAB 3 H
BPC CTR 3 H
WS CLK
BPC BPR Ø H
BPC BPR 1 H
BPC BPR 2 H
BPC BPR 3 H

BPC CLK BPR LB L

74LS298 E13
SSO RDAB 4 H
BPC CTR 4 H
SSO RDAB 5 H
BPC CTR 5 H
SSO RDAB 6 H
BPC CTR 6 H
SSO RDAB 7 H
BPC CTR 7 H
WS CLK
BPC BPR 4 H
BPC BPR 5 H
BPC BPR 6 H
BPC BPR 7 H

74LS298 E57
SSO RDAB 8 H
BPC CTR 8 H
SSO RDAB 9 H
BPC CTR 9 H
SSO RDAB 10 H
BPC CTR 10 H
SSO RDAB 11 H
BPC CTR 11 H
WS CLK
BPC BPR 8 H
BPC BPR 9 H
BPC BPR 10 H
BPC BPR 11 H

BPC CLK BPR HB L

74LS298 E65
SSO RDAB 12 H
BPC CTR 12 H
SSO RDAB 13 H
BPC CTR 13 H
SSO RDAB 14 H
BPC CTR 14 H
SSO RDAB 15 H
BPC CTR 15 H
WS CLK
BPC BPR 12 H
BPC BPR 13 H
BPC BPR 14 H
BPC BPR 15 H

CSR M1 L — 74LSØ4 E5Ø
BPC SET OVFLO H — 74LSØØ E75
CSR GO1 TR H — 74LSØØ E75
74LSØ8 E62
CSR M2 L — 74LSØØ E75
CSR M1 L

+5V — R59 1K
BPC M2+M3 H — 74LSØ2 E41
FIN INIT H
74LS74 E71
CSR ST2 FLAG H
74LS74 E71
CSR GO H
74LSØ2 E63
BPC FIRE BP H
FIN 2 MHZ H
74LS74 E2
BIN BPR L
CSR GO L — 74LSØ2 E63

+5V — C33 220PF — R44 7.5K
8881 E47
BPC SET OVFLO H
BPC SET OVFLO L
BPC OVRFLO H — 500NS 9602 E52
R42 1K +5V
FIN INIT L
+5V — R27 2K — D13 IN4ØØ4
D12 IN4ØØ4
R29 47 FUSIBLE
CV2
BPC CLK OV L
J1
J2

+5V — C31 68PF — R26 5.6K
BPC FIRE BP H — 9602 E48 200NS
R31 1K +5V
FIN INIT L — 7405 E73 — 12 (200NS)
+5V — R51 2.7K
C36 220PF
7414 E69
BPC INIT DEL L

CSR M2 L — 74LSØØ E75
CSR M3 L
BPC M2+M3 H
74LSØØ E25
BPC INIT DEL L
74LSØ2 E41
BIN WR BPR LB L
74LSØØ E25
BIN WR BPR HB L
74LSØ2 E33
BPC CLK BPR LB L
74LSØ2 E41
BPC CLK BPR HB L

CSR GO2 L

74LS193 E22
BPC BPR Ø H
BPC BPR 1 H
BPC BPR 2 H
BPC BPR 3 H
CRY BRW
CLR LD CUP CDN
BPC CTR Ø H
BPC CTR 1 H
BPC CTR 2H
BPC CTR 3 H
R9 1K +5V
FIN SEL CLK L

74LS193 E18
BPC BPR 4 H
BPC BPR 5H
BPC BPR 6 H
BPC BPR 7 H
BPC CTR 4H
BPC CTR 5H
BPC CTR 6 H
BPC CTR 7H

74LS193 E53
BPC BPR 8 H
BPC BPR 9 H
BPC BPR 10 H
BPC BPR 11 H
BPC CTR 8 H
BPC CTR 9H
BPC CTR 10H
BPC CTR 11 H

BPC OVRFLO H
74LS193 E66
BPC BPR 12 H
BPC BPR 13 H
BPC BPR 14 H
BPC BPR 15 H
BPC CTR 12 H
BPC CTR 13 H
BPC CTR 14 H
BPC CTR 15 H

REVISIONS		
CHK	CHANGE NO.	REV.

BUFFER/PRESET & COUNTER REGS (BPC)

TITLE	SIZE	CODE	NUMBER	REV.
REAL TIME CLOCK	D	CS	M7953-Ø-1	H
SCALE —	SHEET 6 OF 6	DIST.		

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

PARTS LIST

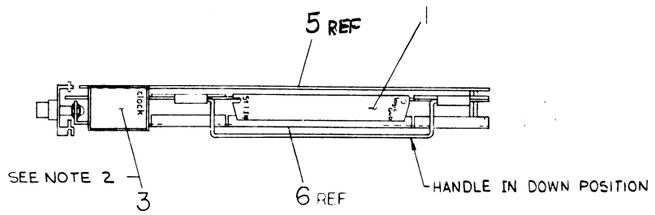
MADE BY M. Archie DATE 7 MARCH 78	CHECKED DATE 19 MAY 78	SECTION 1
ENG DATE 23-MAY-78	PROD B Cook DATE 23-MAY-78	ISSUED SECT. 1

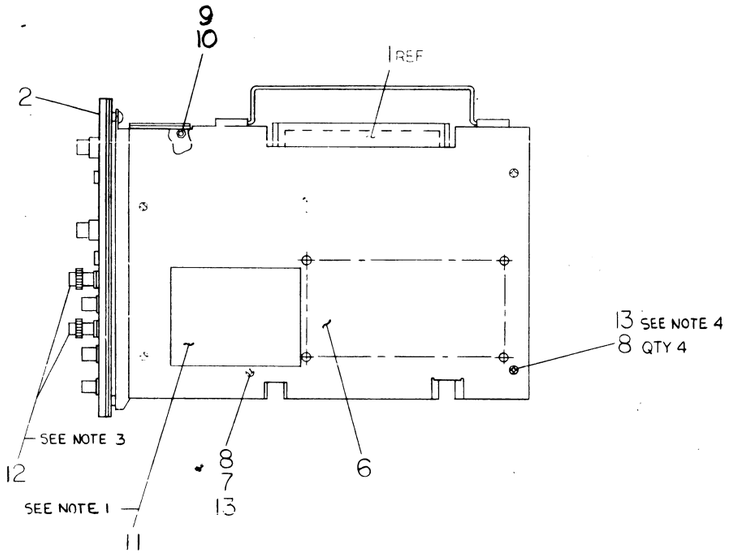
ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY VARIATION
1	D-UA-MNCKW-Ø-Ø	MNCKW UNIT ASSY	1
2	MPØØ593	PRINT SET MNCKW	1
3	AA-D572A-TC	WORKING WITH MINC DEVICE	1

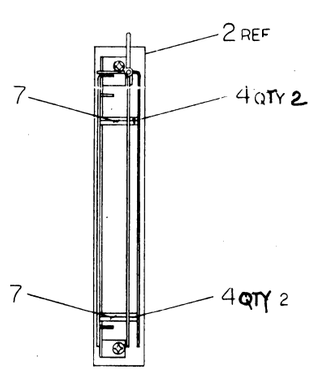
TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV	ECO NO.
SHIP LIST MNCKW	——/——	A	PL	MNCKW-Ø-SH		
	SHEET 1 OF 1		DIST			

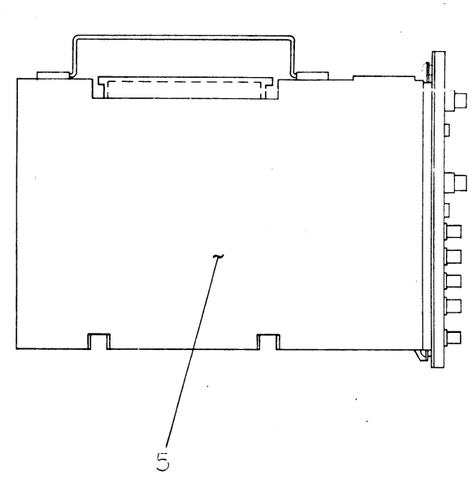
DEC FORM

NOTES:
1. ITEM #11 IS PUT ON BY ALIGNING THE RIGHT HAND EDGE OF DECAL UP AGAINST HOLES AND BOTTOM EDGE JUST ABOVE MOUNTING HOLE.
2. ITEM #3 IS PUT ON BY ALIGNING THE TOP EDGE AND RIGHT HAND EDGE EVEN WITH THE TOP EDGE AND RIGHT HAND EDGE OF ITEM #5.
3. ITEM #12 IS PUT ON BNC'S LABEL ST1 IN AND ST2 IN.
4. USING ITEM #13 ADD ONE DROP TO EACH LOCATION.









1	PACKAGING INSTRUCTIONS	A-SP-3700358-01	15
REF	CHKOUT & ACCEPT PROCEDURE	A-SP-MNCKW-Ø-3	14
A/R	LOCKTITE	9009321	13
2	BNC SHORTING	B-IA-7009993-0-0	12
1	DECAL, INFORMATION(MNCKW)	A-DC-3615264-6-0	11
1	NUT, KEPS #6-32	9008185	10
1	WASHER, FLAT	9006653	9
5	SCR, FLAT HD #6-32×.25	9006020-02	8
3	SPACER, THREADED #6-32×.88	9006861	7
1	PLATE, COMP. SIDE	D-MD-7419869-0-0	6
1	PLATE, ETCH SIDE	D-IA-7419868-0-0	5
4	SPACER, THREADED #6-32×.25	9006841	4
1	DECAL, I/O SCHMETIC	A-DC-3615260-6-0	3
1	MNCKW SUB-ASSY	D-AD-7015070-0-0	2
1	CONN ASSY, I/O	D-IA-7014153-4-0	1
	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES					
		OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
SURFACE QUALITY IN ✓ MICROINCHES	MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
	PREFERRED ☐	±.012	±.016	±.025	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH NONE

DRN.		29 Aug 77
CHK'D		31 Aug 77
ENG.		3/21/78
PROJ. ENG		3/21/78
PROD.		3/21/78
NEXT HIGHER ASSY.		
B-DD-MNCKW-Ø		
SCALE 1/2		
SHEET 1 OF 1		

FIRST USED ON MNCKW digital

TITLE
MNCKW
UNIT ASSY

SIZE	CODE	NUMBER	REV.
D	UA	MNCKW-Ø-Ø	A

DIST.

REVISIONS			
CHK	CHANGE NO.		REV.
F.H	MNCKW-MR002		A
F Clark	6 Nov 78		
A. FLIZ			
C C Eng	7 Nov 78		

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION DATE 7/19/78

TITLE MNCKW Installation/Acceptance Procedure

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
O. K. Arnold 24-Jul-78	R. Shenon 24-Jul-78	A	SP	MNCKW-0-4	

DEC 16-(392)-1079A

SHEET 1 OF 3

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE MNCKW Installation/Acceptance Procedure

1.0 GENERAL

1.1 SCOPE

This document describes the procedures for the installation and field acceptance of the MNCKW (Programmable Real-Time Clock) option for the MINC-11 system. This procedure will be used for in-house FA&T, field add-on and new system installation, and periodic verification testing.

1.2 EQUIPMENT

MINC-11	System
MNCKW	Clock Option
MNCKW-TA	Test Module (Optional)
7014153-4-0	I/O Connector

1.3 DOCUMENTATION

MAINDEC-11-DVMNC-B	Diagnostic Program
A-SP-MNCKW-0-2	MNCKW Engineering Specification
MP00593	Print Set
AA-D572A-TC	"Working With MINC Devices"

2.0 INSTALLATION

2.1 INITIAL SET-UP

The address and vector switches on the MNCKW board must be set properly as indicated in the manual "Working With MINC Devices"

2.2 LOCATION

The MNCKW may be inserted into any of the 8 possible MINC slots. However, if the MINC-11 system includes an MNCAD A/D converter, then the MNCKW should be installed to the right of the MNCAD. It may be installed to the immediate right or with one or more digital options (MNCAA, MNCDO, MNCDI) between the MNCKW and MNCAD.

2.3 TEST MODULE

If the MNCKW-TA test module is available it should be plugged into the I/O connector fingers on the top of the MNCKW. If no test module is available plug the standard I/O connector into the fingers.

2.4 POWER UP

All other options to be tested and any of their test modules should be mounted in the system. Power may then be applied.

SIZE	CODE	NUMBER	REV
A	SP	MNCKW-0-4	

DEC FORM NO EN-01022-16-N370-(381)
DRA 108

SHEET 2 OF 3

ENGINEERING SPECIFICATION — CONTINUATION SHEET

TITLE MNCKW Installation/Acceptance Procedure

3.0 ACCEPTANCE

Refer to the diagnostic documentation for instructions on loading the diagnostic. Start at location 200. Location 204 is used for restarting after a program halt.

Follow the type out concerning front panel switch settings. The diagnostic will type out the current (old) software switch register and wait for the operator to type in a new value. Switch register functions are described in the documentation. Simply type a carriage return to leave the switch register unchanged.

The diagnostic will then type a menu of tests. Select the logic test with or without the test module (dwarf). When the test module is available, more complete testing of the MNCKW I/O signals can be done. The program will type instructions when required concerning switch settings on the MNCKW front panel and the test module.

At the start of the logic test, the program will type out the number of clock modules detected on the MINC system. All clocks will be tested unless this feature is inhibited (see the diagnostic documentation).

No errors are allowable for MNCKW acceptance.

SIZE	CODE	NUMBER	REV
A	SP	MNCKW-0-4	

DEC FORM NO EN-01022-16-N370-(381)
DRA 108

SHEET 3 OF 3