digital

XM15

Engineering Drawings

Digital Equipment Corporation

FIELD MAINTENANCE PRINT SET

TABLE OF CONTENTS

UNIT VARIATIONS COVERED BY THIS PRINT SET
XM15-BA
XM15-BB
XM15-UJ
XM15-UK
XM15-UL
XM15-UM
XM15-UN
XM15-UP
XM15-WJ
XM15-WK
XM15-WL
XM15-WM
XM15-WN
XM15-WP
XM15-WR
XM15-WS

XM15
Field Maintenance Print Set

Digital Equipment Corporation

PRINT SET ORDER NO.
MPØØØ13

REVISIONS	REV.	CHG. NO.	DATE
	A	XM15-2	9-76

USED ON OPTION/MODEL	
XM15	

SHEET I OF 2

DRN. R W Counter	DATE 11-Nov-75	digital
CHK'D	DATE 11Nov75	TITLE: MEMORY PROCESSOR (XM15)
PROJ. ENG.	DATE	
FIELD SERV.	DATE	

SIZE	CODE	NUMBER	REV.
B	TC	XM15-Ø-9	A
DIST.			

D-CS-M7176-Ø-APIR	API REQ'S
D-CS-M7176-Ø-PLØ3	PRIORITY LEVELS Ø-3
D-CS-M7176-Ø-PL47	PRIORITY LEVELS 4-7
D-CS-M7176-Ø-TRQ	TEST REQUESTS
D-CS-M7176-Ø-IOBR	I/O BUS RECV
D-CS-M7176-Ø-BAPI	BUFFERED API CONTROL
D-CS-M7176-Ø-CLKM	CLK AND I/O MUX
D-CS-M7176-Ø-IOA	I/O ADDRESS
D-CS-M7176-Ø-IPD	I BUS DRIVERS
D-UA-M5921-Ø-Ø	BUS XCVR
D-CS-M5921-Ø-1	BUS XCVR
D-UA-G827Ø-Ø-Ø	LOW VOLT DET
D-CS-G827Ø-Ø-1	LOW VOLT DET
D-BS-XM15-Ø-DRIV	XM15 IOB & API DRIVERS
D-BS-XM15-Ø-1	XM15 BUS1&2 AND EXT PROCESSOR CONN
D-BS-XM15-Ø-2	MDL & IOB CONNECTORS
D-BS-XM15-Ø-3	IOB & IBUS CONNECTORS
D-BS-XM15-Ø-4	API CABLE TERM & CONN
D-AD-7011524-0-0	WIRED ASSY (XM15)
D-IA-7011502-0-0	LOGIC POWER HARNESS
A-SP-XM15-Ø-5	XM15 MEMORY PROCESSOR
A-SP-XM15-Ø-6	XM15 CUSTOMER ACCEPTANCE
K-WL-XM15-0-WL	XM15 NAME LIST

TITLE		SIZE	CODE	NUMBER	REV
MEMORY PROCESSOR (XM15)	SHEET 2 OF 2	B	TC	XM15-Ø-9	A

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

SEQUENCE SEQUENCE

NOTE: FOR FIELD MAINTENANCE PRINT SET SEE:
B-TC-XM15-Ø-9

THIS IS PRINT SET

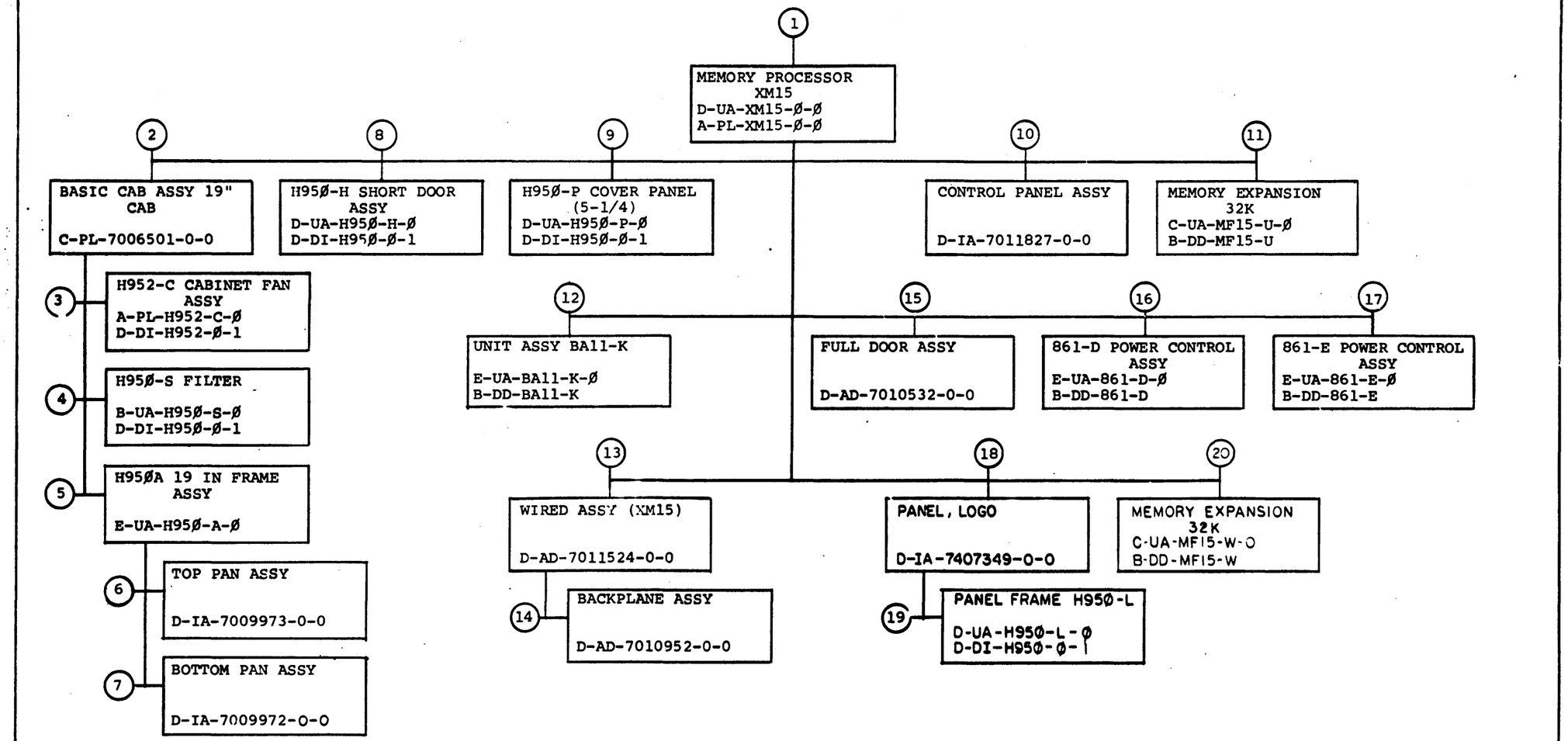
UNIT VARIATIONS		PRINT SET
VAR	TITLE	
XM15-BA	MEMORY PROCESSOR (XM15)	
XM15-BB	MEMORY PROCESSOR (XM15)	
XM15-UJ	MEMORY PROCESSOR (XM15)	
XM15-UK	MEMORY PROCESSOR (XM15)	
XM15-UL	MEMORY PROCESSOR (XM15)	
XM15-UM	MEMORY PROCESSOR (XM15)	
XM15-UN	MEMORY PROCESSOR (XM15)	
XM15-UP	MEMORY PPOCESSOR (XM15)	
XM15-WJ	MEMORY PROCESSOR (XM15)	
XM15-WK	MEMORY PROCESSOR (XM15)	
XM15-WL	MEMORY PROCESSOR (XM15)	
XM15-WM	MEMORY PROCESSOR (XM15)	
XM15-WN	MEMORY PROCESSOR (XM15)	
XM15-WP	MEMORY PROCESSOR (XM15)	
XM15-WR	MEMORY PROCESSOR (XM15)	
XM15-WS	MEMORY PROCESSOR (XM15)	

REVISIONS		
DATE	CHG. NO.	REV
3-76	XM15-1	A
9-76	XM15-2	B

USED ON OPTION/MODEL	
XM15	

SHEET 1 OF 6

DRN. R W Carter	DATE 11-NOV-15	TITLE
ENGR.	DATE 14 Nov 75	MEMORY PROCESSOR (XM15)
PROJ. ENG.	DATE	
FIELD	DATE 14 Nov 75	SIZE B · CODE DD · NUMBER XM15-Ø · REV B
FIELD SERV.	DATE	DIST



TITLE		SIZE	CODE	NUMBER	REV
MEMORY PROCESSOR (XM15)	SHEET 2 OF 6	B	DD	XM15-Ø	B

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
			ELECTRICAL				
		1	D-UA-XM15-Ø-Ø	#	4	MEMORY PROCESSOR (XM15)	
			A-PL-XM15-Ø-Ø	#	3	MEMORY PROCESSOR (XM15)	
			D-BS-XM15-Ø-DRIV	#	1	XM15 IOB & API DRIVERS	
			D-BS-XM15-Ø-1	#	1	XM15 BUS 1&2 AND EXT PROCESSOR CONN	
			D-BS-XM15-Ø-2	#	1	MDL & IOB CONNECTORS	
			D-BS-XM15-Ø-3	#	1	IOB & IBUS CONNECTORS	
			D-BS-XM15-Ø-4	#	1	API CABLE TERM & CONN	
			A-SP-XM15-Ø-5	#	10	XM15 MEMORY PROCESSOR	
			A-SP-XM15-Ø-6	#	3	XM15 CUSTOMER ACCEPTANCE	
			A-SP-XM15-Ø-7	#	7	XM15 BUILD & CHECKOUT PROCED.	
			B-DD-M7172-Ø	#	2	15 MEM-UNIBUS INTERFACE	
			B-DD-M7173-Ø	#	2	MEMORY PORT	
			B-DD-M7174-Ø	#	2	IPF	
			B-DD-M7175-Ø	#	2	MEM MGR	
			B-DD-M7176-Ø	#	2	API	
			B-DD-M5921-Ø	#	2	BUS XCVR	
			B-DD-G827Ø-Ø	#	2	LOW VOLT DET	
			A-PL-M966-Ø-Ø	#	1	PDP-15 MEMORY BUS TERMINATOR	
			D-CS-M93Ø-Ø-1	#	2	BUS TERMINATOR	
			B-CS-M91Ø-Ø-1	#	1	CP TERMINATOR CARD	
			B-CS-M621-Ø-1	#	1	DATA BUS DRIVER	
			B-CS-M622-Ø-1	#	1	BUS DRIVER	
			B-TC-XM15-Ø-9	#	2	FIELD MAINT. PRINT SET	
			MPØØØ13			XM15 PRINT SET	
			A-SP-XM15-Ø-10	#	3	IN-HOUSE ACCEPTANCE PROC.	
			K-WL-XM15-Ø-WL	#	1	WIRE LIST	
		11	B-DD-MF15-U	#	4	MEMORY EXPANSION 32K	

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
			ELECTRICAL				
		12	B-DD-BA11-K	#	4	UNIT ASSY BA11-K	
		13	D-AD-7011524-0-0	#	1	WIRED ASSY (XM15)	
			A-WT-7011524-0	#	1	AWT REVISION STATUS	
		16	B-DD-861-D	#	3	861-D POWER CONTROL ASSY	
		17	B-DD-861-E	#	3	861-E POWER CONTROL ASSY	
		20	B-DD-MF15-W	#		MEMORY EXPANSION 32K	

CUSTOMER PRINT SET CODES

X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE		SIZE	CODE	NUMBER	REV
MEMORY PROCESSOR (XM15)	SHEET 3 OF 6	B	DD	XM15-Ø	B

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
			MECHANICAL				
		8	D-UA-H95Ø-HH-Ø	#	1	H95Ø-H SHORT DOOR ASSY	
			A-PL-H95Ø-HH-Ø	#	4	H95Ø-H SHORT DOOR ASSY (PL)	
			D-DI-H95Ø-Ø-1	#	1	H95Ø DWG INDEX LIST	
		9	D-UA-H95Ø-PB-Ø	#	1	H95Ø-P COVER PANEL 5-1/4	
			A-PL-H95Ø-PB-Ø	#	1	H95Ø-P COVER PANEL 5-1/4 (PL)	
			D-DI-H95Ø-Ø-1	#	1	H95Ø DWG INDEX LIST	
		10	D-IA-7011827-0-0	#	1	CONTROL PANEL ASSY	
		11	B-DD-MF15-U	#	4	MEMORY EXPANSION 32K	
			C-UA-MF15-U-Ø	#	2	MEMORY EXPANSION 32K	

CUSTOMER PRINT SET	MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO / FILE DATE
			MECHANICAL				
		12	B-DD-BA11-K	#	4	DRAWING DIRECTORY BA11-K	
			E-UA-BA11-K-Ø	#	2	UNIT ASSY BA11-K	
		13	D-AD-7011524-0-0	#	1	WIRED ASSY (XM15)	
		14	D-AD-7010952-0-0	#	1	BACKPLANE ASSY	
		15	D-AD-7010532-0-0	#	1	FULL DOOR UNIT ASSY	
		16	B-DD-861-D	#	3	861-D POWER CONTROL ASSY	
			E-UA-861-D-Ø	#	2	861-D POWER CONTROL ASSY	

CUSTOMER PRINT SET CODES

X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE		SIZE	CODE	NUMBER	REV
MEMORY PROCESSOR (XM15)	SHEET 5 OF 6	B	DD	XM15-Ø	B

MECHANICAL

CUSTOMER PRINT SET	SET MFG.	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
		17	B-DD-861-E	#	3	861-E POWER CONTROL ASSY	
			E-UA-861-E-Ø	#	2	861-E POWER CONTROL ASSY	
		19	C-UA-H95Ø-L-Ø	#	2	H95Ø-L FRAME PANEL	
			A-PL-H95Ø-L-Ø	#	2	H95Ø-L FRAME PANEL	
			D-DI-H95Ø-Ø-I	#	1	H95Ø DWG INDEX LIST	
		18	D-IA-7407349-0-0	#	1	PANEL LOGO	
			7407349-1	#	-	PANEL INLAY	
		20	B-DD-MF15-W	≠		MEMORY EXPANSION 32K	
			C-UA-MF15-W-Ø	≠	4	MEMORY EXPANSION 32K	

CUSTOMER PRINT SET	SET MFG.	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE

CUSTOMER PRINT SET CODES

x = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE	SHEET	SIZE	CODE	NUMBER	REV
MEMORY PROCESSOR (XM15)	6 OF 6	B	DD	XM15-Ø	B

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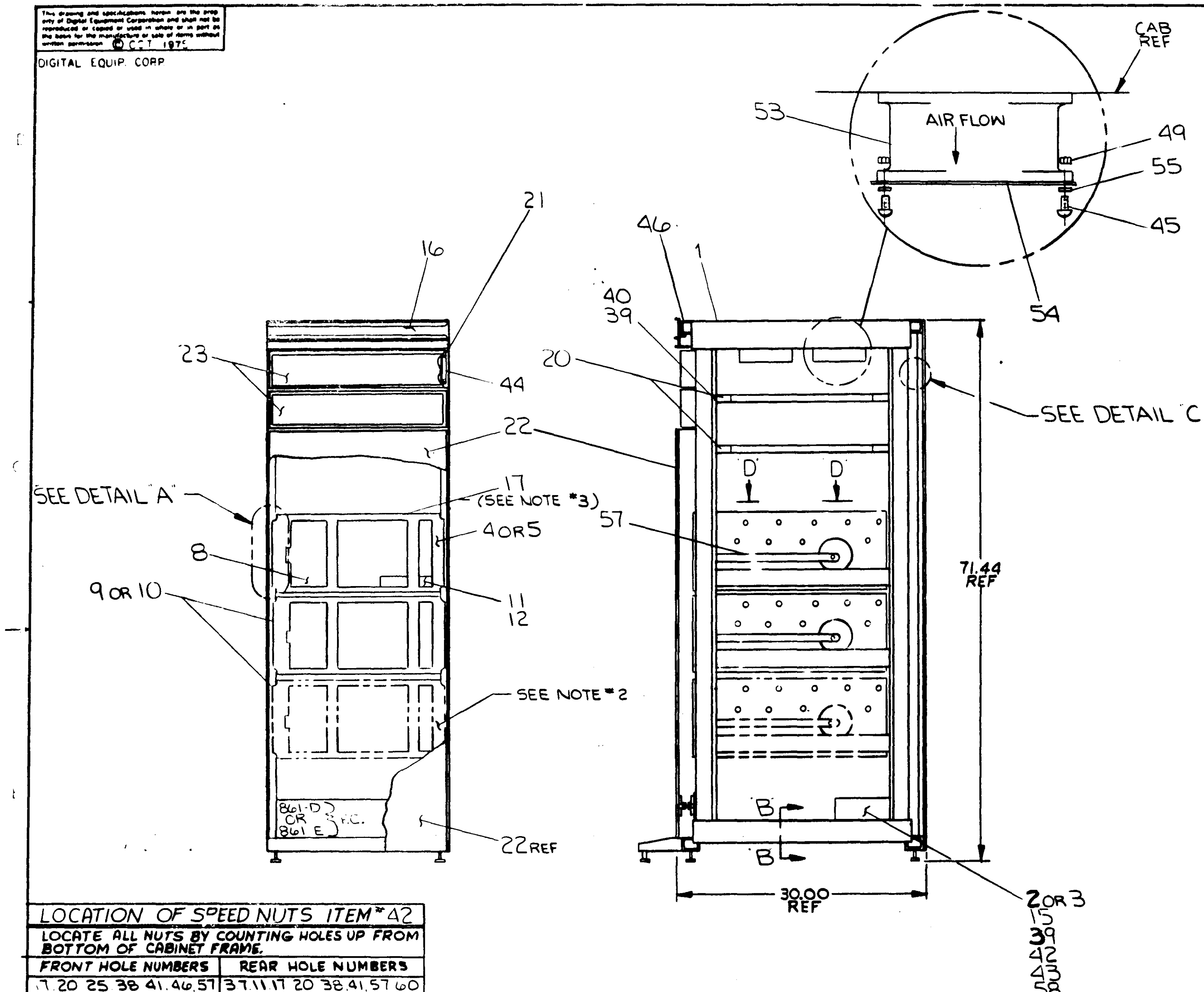


LEGEND	
NUMBER	VARIATION
XM15-BA	BASIC
XM15-BB	BASIC
XM15-UJ	32K MF15 115V 60Hz
XM15-UK	32K MF15 230V 50Hz
XM15-UL	64K MF15 115V 60Hz
XM15-UM	64K MF15 230V 50Hz
XM15-UN	96K MF15 115V 60Hz
XM15-UP	96K MF15 230V 50Hz
XM15-WJ	32K MF15 115V 60HZ
XM15-WK	32K MF15 230V 50HZ
XM15-WL	64K MF15 115V 60HZ
XM15-WM	64K MF15 230V 50HZ
XM15-WN	96K MF15 115V 60HZ
XM15-WP	96K MF15 230V 50HZ
XM15-WR	128K MF15 115V 60HZ
XM15-WS	128K MF15 230V 50HZ

NOTES:

1. FOR LOCATION OF MODULES (ITEMS *27 THRU 38) SEE SHEET *4.
2. ANY ADDITIONAL 32K MEMORY WILL BE INSTALLED IN THIS LOCATION.
3. CHASSIS COVER (ITEM *17) IS REWORKED FROM EXISTING COVER ON BA11-K (ITEM *4 OR 5).
4. REMOVE EXISTING CONTROL PANEL ON CUSTOMER UNIT & REPLACE WITH NEW CONTROL PANEL (ITEM *56).

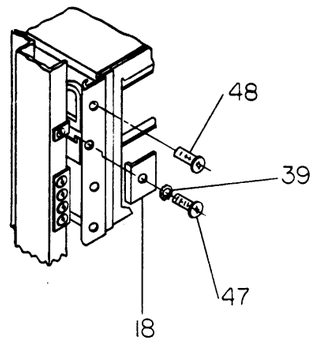
LOCATION OF SPEED NUTS ITEM *42	
LOCATE ALL NUTS BY COUNTING HOLES UP FROM BOTTOM OF CABINET FRAME.	
FRONT HOLE NUMBERS	REAR HOLE NUMBERS
17.20.25.38.41.46.57 60.65 BOTH SIDES	3.7.11.17.20.38.41.57.60 BOTH SIDES
RIGHT SIDE HOLE NUMBERS	LEFT SIDE HOLE NUMBERS
80.90.103.108	90.

CAUTION: OFF SHEET PARTS LIST EXIST. SEE A-PL-XM15-0-0

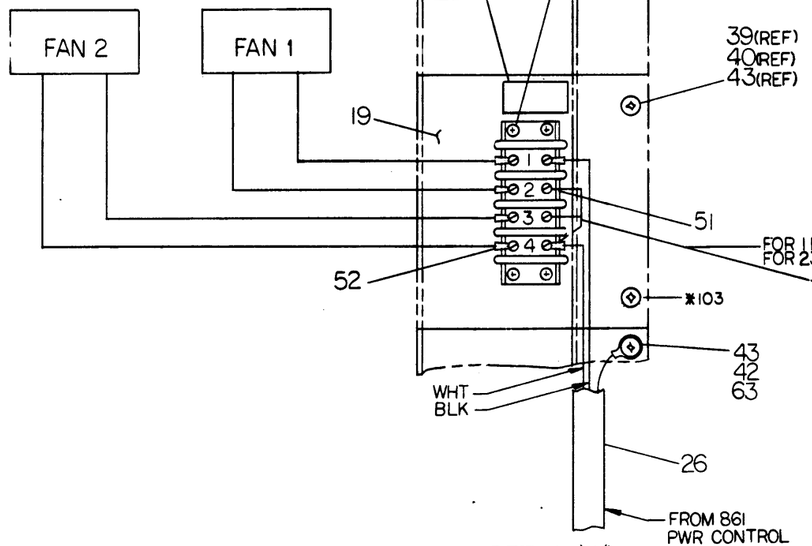
REVISIONS			
CHK	CHANGE NO		REV
	XM15 00001	F. DOLL	A
	XM15 00002	F. DOLL	B

FIRST USED ON OPTION/MODEL	XM15
DESCRIPTION	PARTS LIST
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES	DECIMALS .XXX ± .005, .XX ± .02, .X ± .1; ANGLES ± 0° 30'
REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	
MATERIAL	—
FINISH	—
DRN	R.W. Counter, DATE 8-OCT-75
NEXT HIGHER ASSY.	B-DD-XM15-0
TITLE	MEMORY PROCESSOR (XM15)
SIZE	D
CODE	UA
NUMBER	XM15-0-0
REV.	B
SHEET	1 OF 4

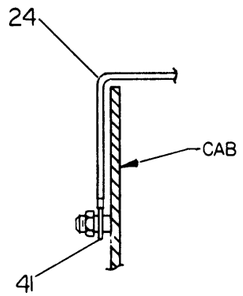
digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS



DETAIL "A"
BOTH SIDES
SCALE: NONE
TYP 3 PLCS



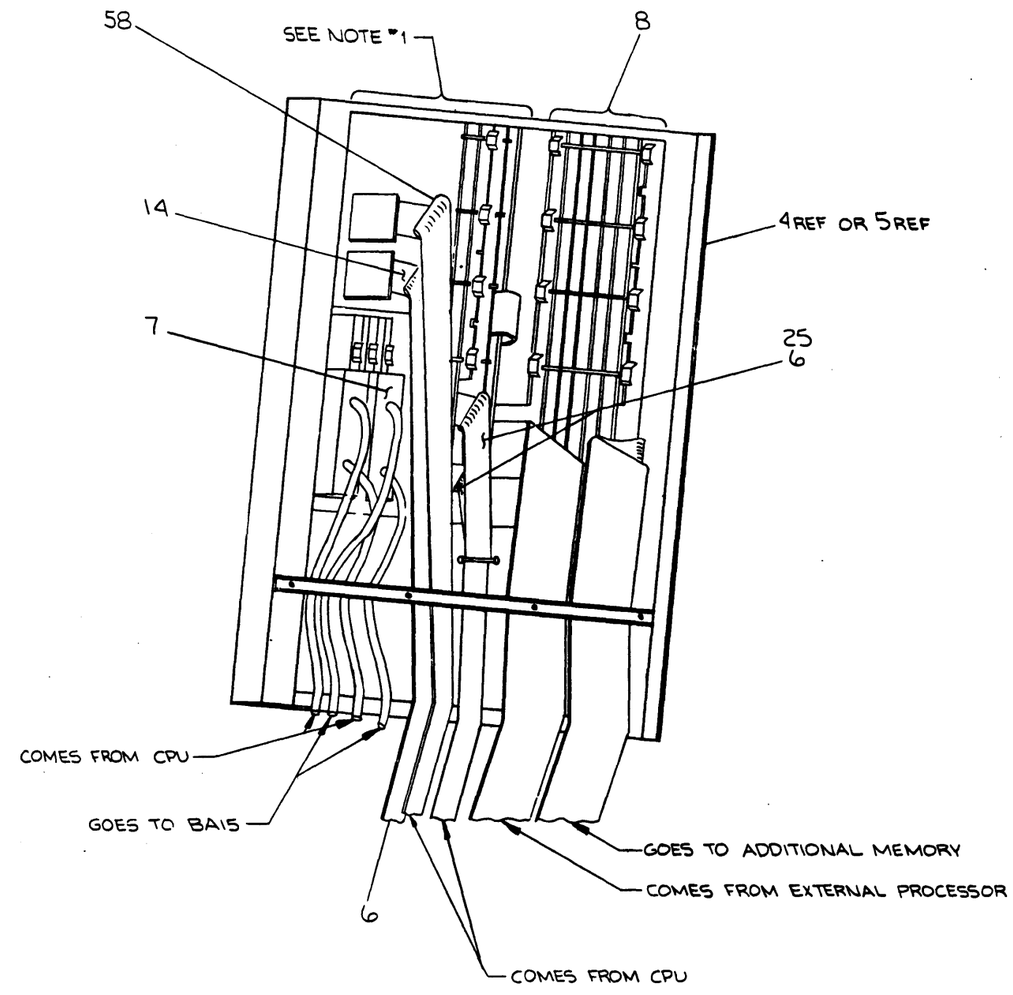
DETAIL "C"
SCALE: NONE



SECTION B-B
SCALE: NONE

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
MEMORY PROCESSOR (XM15)	D	UA	XM15-Ø-Ø	B
SCALE — / — SHEET 2 OF 4	DIST.			



VIEW D-D
SCALE: NONE
ROTATED 85° COUNTER CLOCKWISE

REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
MEMORY PROCESSOR (XM15)	D	UA	XM15-Ø-Ø	B
SCALE —	SHEET 3 OF 9	DIST.		

NOTE
1 OPEN SLOTS ARE NOT USABLE FOR EXPANSION DUE TO EXISTING SIGNALS CONNECTED. SPARE SLOTS ARE RESERVED FOR EXPANSION.

	13	12	11	10	9	8	7	6	5	4	3	2	1
A	UNIBUS OUT			UNIBUS IN		MDL DATA			M621	IOB OUT	IOB OUT	IOB IN	IOB IN
B						MDL CONTROL			M621				
C	MEM 2 CABLE	M7173 MEM PORT 2	M7174 IPF	MEM 1 CABLE	M7173 MEM PORT 1	M7172 BUS CONVERTER	M7175 KT	M7176 KA	M621	M622	M622	M621	SPARE
D									IBUS CABLE	M91Ø	SPARE	SPARE	
E	OPEN SEE NOTE *1			OPEN SEE NOTE *1					API CABLE	M966 -YA			
F									OPEN SEE NOTE *1				

LOOKING FROM MODULE SIDE

DESCRIPTION	DWG/PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±½° 30' — SURFACE QUALITY IN MICROINCHES

CLASS OF ACCURACY (CHECK ONE)	OVER 0 TO 0.3	OVER 0.3 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
MEDIUM	±.004	±.008	±.012	±.016	±.024	±.04
PREFERRED	±.012	±.016	±.026	±.04	±.063	±0.1

QUANTITY & VARIATION

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL —

FINISH —

DRN. R.W. Counter 7-30-75
CHK'D 14 Nov 75
ENG. 14 Nov 75
PROJ. ENG. 14 Nov 75
PROD. 14 Nov

NEXT HIGHER ASSY.
B-DD-XM15-Ø

SCALE —

SHEET 4 OF 4

FIRST USED ON XM15

digital

TITLE MEMORY PROCESSOR XM15

SIZE	CODE	NUMBER	REV.
D	UA	XM15-Ø-Ø	B

DIST.

REV. | CHANGE NO. | REVISIONS | CHK

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY R. W. CAUNTER | DATE 9/26/75 | CHECKED [signature] | DATE 14 Nov 75 | SECTION
ENG [signature] | DATE 14 Nov 75 | PROD [signature] | DATE 14 Nov 75 | ISSUED SECT.

ITEM NO	DWG NO./PART NO.	DESCRIPTION	XM15-BA	XM15-BB	XM15-UJ	XM15-UK	XM15-UL	XM15-UM	XM15-UN	XM15-UP	XM15-WJ	XM15-WK	XM15-WL	XM15-WM
1	C-PL-7006501-10-0	BASIC CABINET ASSY 19 INCH	1	1	1	1	1	1	1	1	1	1	1	1
2	E-UA-861-D-Ø	861-D POWER CONTROL ASSY (125V)	1	-	1	-	1	-	1	-	1	-	1	-
3	E-UA-861-E-Ø	861-E POWER CONTROL ASSY (24ØV)	-	1	-	1	-	1	-	1	-	1	-	1
4	E-UA-BA11-KE-Ø	UNIT ASSY BA11-K (125V)	1	-	1	-	1	-	1	-	1	-	1	-
5	E-UA-BA11-KF-Ø	UNIT ASSY BA11-K (24ØV)	-	1	-	1	-	1	-	1	-	1	-	1
6	D-UA-BCØ8A-7-Ø	BCØ8A CABLE (7 FEET)	2	2	2	2	2	2	2	2	2	2	2	2
7	D-UA-BCØ9B-Ø7-Ø	BCØ9B CABLE ASSY (7 FEET)	1	1	1	1	1	1	1	1	1	1	1	1
8	C-UA-MF15-UA-Ø	MEMORY EXPANSION 32K	-	-	1	1	1	1	2	2	-	-	-	-
9	C-UA-MF15-UC-Ø	MEMORY EXPANSION 32K	-	-	-	-	1	-	1	-	-	-	-	-
10	C-UA-MF15-UD-Ø	MEMORY EXPANSION 32K	-	-	-	-	-	1	-	1	-	-	-	-
11	D-AD-7011524-0-0	WIRED ASSY (XM15)	1	1	1	1	1	1	1	1	1	1	1	1
12	D-IA-7011502-0-0	LOGIC POWER HARNESS VT48	1	1	1	1	1	1	1	1	1	1	1	1
13	D-AD-7010532-0-0	FULL DOOR UNIT ASSY 19"	1	1	1	1	1	1	1	1	1	1	1	1
14	C-IA-7006437-8-0	CABLE DUAL MYLAR M922-M922 (8 FEET)	1	1	1	1	1	1	1	1	1	1	1	1
15	C-IA-7008288-3F-Ø	CABLE ASSY (3-1/2 FEET)	1	1	1	1	1	1	1	1	1	1	1	1
16	D-IA-7407349-1-0	PANEL LOGO	1	1	1	1	1	1	1	1	1	1	1	1
17	D-MD-7414783-0-0	COVER CHASSIS, REWORK	1	1	1	1	1	1	1	1	1	1	1	1
18	B-MD-7413664-0-0	BRKT, LOCKING	2	2	2	2	4	4	4	4	2	2	2	2
19	C-MD-7407607-0-0	PLATE, JONES STRIP	1	1	1	1	1	1	1	1	1	1	1	1
20	C-MD-7409312-0-0	BRACKET, SHIPPING	3	3	3	3	3	3	3	3	3	3	3	3
21	1209224	LATCH MOLDING	4	4	4	4	4	4	4	4	4	4	4	4
22	D-UA-H95Ø-HH-Ø	SHORT DOOR ASSY	1	1	1	1	1	1	1	1	1	1	1	1

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-Ø-Ø | SIZE A | CODE PL | NUMBER XM15-Ø-Ø | REV B | ECO NO. XM15-000C2
SHEET 1 OF 8 | DIST.

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY R. W. CAUNTER | DATE 9/26/75 | CHECKED [signature] | DATE 14 Nov 75 | SECTION
ENG [signature] | DATE 14 Nov 75 | PROD [signature] | DATE 14 Nov 75 | ISSUED SECT.

ITEM NO	DWG NO./PART NO.	DESCRIPTION	XM15-BA	XM15-BB	XM15-UJ	XM15-UK	XM15-UL	XM15-UM	XM15-UN	XM15-UP	XM15-WJ	XM15-WK	XM15-WL	XM15-WM
23	D-UA-H95Ø-PB-Ø	COVER PANEL 5-1/4	2	2	2	2	2	2	2	2	2	2	2	2
24	9107646	TUBING, EXTRUDED 5/8" BLK	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
25	9107679	TUBING ZIPPER 1" BLK	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
26	9107673-6	POWER CORD #14 AWG	1	1	1	1	1	1	1	1	1	1	1	1
27	D-UA-M7172-Ø-Ø	15 MEM-UNIBUS INTERFACE	1	1	1	1	1	1	1	1	1	1	1	1
28	D-UA-M7173-Ø-Ø	MEMORY PORT	2	2	2	2	2	2	2	2	2	2	2	2
29	D-UA-M7174-Ø-Ø	IPF	1	1	1	1	1	1	1	1	1	1	1	1
30	D-UA-M7175-Ø-Ø	MEM MGR	1	1	1	1	1	1	1	1	1	1	1	1
31	D-UA-M7176-Ø-Ø	API	1	1	1	1	1	1	1	1	1	1	1	1
32	D-CS-M966-YA-1	PDP15 MEMORY BUS TERMINATOR	3	3	3	3	3	3	3	3	3	3	3	3
33	D-CS-M622-Ø-1	BUS DRIVER	2	2	2	2	2	2	2	2	2	2	2	2
34	D-CS-M621-Ø-1	DATA BUS DRIVER	4	4	4	4	4	4	4	4	4	4	4	4
35	D-CS-M91Ø-Ø-1	CP TERMINATOR CARD	1	1	1	1	1	1	1	1	1	1	1	1
36	D-UA-M5921-Ø-Ø	BUS XCVR	3	3	3	3	3	3	3	3	3	3	3	3
37	D-CS-M93Ø-Ø-1	BUS TERMINATOR	1	1	2	2	2	2	2	2	2	2	2	2
38	D-UA-G827Ø-Ø-Ø	LOW VOLT DET	1	1	1	1	1	1	1	1	1	1	1	1
39	9007651	WASHER EXT TOOTH #10	30	30	30	30	30	30	30	30	3	3	3	3
40	9006565	NUT, KEPS, HEX #10-32	2	2	2	2	2	2	2	2	2	2	2	2
41	9008887	STRAP JUMPER, BRAID WITH TERMINALS	1	1	1	1	1	1	1	1	1	1	1	1
42	9007786	NUT, TINNERMAN #10-32	41	41	41	41	41	41	41	41	41	41	41	41
43	9006074-3	SCR, PHL TRUSS HD #10-32 X 5/8	35	35	35	35	35	35	35	35	35	35	35	35
44	9006074-2	SCR, PHL FLAT HD #10-32 X 5/8	8	8	8	8	8	8	8	8	8	8	8	8

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-Ø-Ø | SIZE A | CODE PL | NUMBER XM15-Ø-Ø | REV B | ECO NO.
SHEET 2 OF 8 | DIST.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY R. W. CAUNTER | DATE 9/26/75 | CHECKED [signature] | DATE 14 Nov 75 | SECTION
ENG [signature] | DATE 14 Nov 75 | PROD [signature] | DATE 14 Nov 75 | ISSUED SECT.

ITEM NO	DWG NO./PART NO.	DESCRIPTION	XM15-BA	XM15-BB	XM15-UJ	XM15-UK	XM15-UL	XM15-UM	XM15-UN	XM15-UP	XM15-WJ	XM15-WK	XM15-WL	XM15-WM
45	9006022-1	SCR, PHL HD #6-32 X 3/8	8	8	8	8	8	8	8	8	8	8	8	8
46	9006065-1	SCR, PHL PAN HD 1/4-20 X 2-1/4	2	2	2	2	2	2	2	2	2	2	2	2
47	9006077-1	SCR, PHL TRUSS HD #10-32 X 1	2	2	2	2	4	4	4	4	2	2	2	2
48	9009248-3	SCR, PHL TRUSS HD #10-32 X 1/4	4	4	4	4	4	4	4	4	4	4	4	4
49	9006560	NUT, KEPS #6-32	12	12	12	12	12	12	12	12	12	12	12	12
50	9006026-3	SCR, PHL TRUSS HD #6-32 X 3/4	4	4	4	4	4	4	4	4	4	4	4	4
51	9006899	TERMINAL BLOCK 4 TERM	1	1	1	1	1	1	1	1	1	1	1	1
52	9007929-1	CONN. SOLDERLESS #6	6	8	6	8	6	8	6	8	6	8	6	8
53	1204826	FAN, CABINET	-	1	-	1	-	1	-	1	-	1	-	1
54	1209175	GUARD, FINGER	-	1	-	1	-	1	-	1	-	1	-	1
55	9006653	WASHER, FLAT .375 O.D. X .156 I.D.	-	6	-	6	-	6	-	6	-	6	-	6
56	D-IA-7011827-0-0	CONTROL PANEL ASSY	1	1	1	1	1	1	1	1	1	1	1	1
57	1211825	SLIDE, CHASSIS, TILT 3 POSITION	1	1	1	1	2	2	2	2	1	1	1	1
58	C-IA-7008288-8F-Ø	CABLE ASSY (8 FEET)	1	1	1	1	1	1	1	1	1	1	1	1
59	D-UA-BCØ8A-8-Ø	BCØ8A CABLE (8 FEET)	1	1	1	1	1	1	1	1	1	1	1	1
60	A-DC-7407314-0-0	FAN HOUSING DECAL	1	-	1	-	1	-	1	-	1	-	1	-
61	A-DC-7406574-0-0	DECAL	-	1	-	1	-	1	-	1	-	1	-	1
62	9107370-22	WIRE #14 AWG RED	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R	A/R
63	9007930	SOLDERLESS CONN #10	1	1	1	1	1	1	1	1	1	1	1	1
64	C-UA-MF15-WA	MEMORY EXPANSION (32K)	-	-	-	-	-	-	-	-	1	1	1	1
65	C-UA-MF15-WB	MEMORY EXPANSION (32K)	-	-		-	-	-	-	-	-	-	1	1
67	C-UA-MF15-WC	MEMORY EXPANSION (32K)	-	-	-	-	-	-	-	-	-	-	-	-

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-Ø-Ø | SIZE A | CODE PL | NUMBER XM15-Ø-Ø | REV B | ECO NO.
SHEET 3 OF 8 | DIST.

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY Fred Doll | DATE 6/21/76 | CHECKED | DATE | SECTION
ENG Fred Doll | DATE 6/21/76 | PROD | DATE | ISSUED SECT.

ITEM NO	DWG NO./PART NO.	DESCRIPTION	XM15-AB	XM15-BB	XM15-UJ	XM15-UK	XM15-UL	XM15-UM	XM15-UN	XM15-UP	XM15-WJ	XM15-WK	XM15-WL	XM15-WM
67	C-UA-MF15-WD	MEMORY EXPANSION (32K)	-	-	-	-	-	-	-	-	-	-	-	-
68	C-UA-MF15-WE	MEMORY EXPANSION (64K)	-	-	-	-	-	-	-	-	-	-	-	-
69	C-UA-MF15-WF	MEMORY EXPANSION (64K)	-	-	-	-	-	-	-	-	-	-	-	-

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-0-0 | SIZE A | CODE PL | NUMBER XM15-0-0 | REV B | ECO NO
SHEET 4 OF 8 | DIST

DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

PARTS LIST

MADE BY Fred Doll | CHECKED | SECTION
DATE 6/21/76 | DATE |
ENG | PROD | ISSUED SECT.
DATE 6/21/76 | DATE |

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION XM15-WN	XM15-WP	XM15-WR	XM15-WS
1	C-PL-7006501-10-0	BASIC CABINET ASSY 19 INCH	1	1	1	1
2	E-UA-861-D-0	861-D POWER CONTROL ASSY (125V)	1	-	1	-
3	E-UA-861-E-0	861-E POWER CONTROL ASSY (240V)	-	1	-	1
4	E-UA-BA11-KE-0	UNIT ASSY BA11-K (125V)	1	-	1	-
5	E-UA-BA11-KF-0	UNIT ASSY BA11-K (240V)	-	1	-	1
6	D-UA-BC08A-7-0	BC08A CABLE (7 FEET)	2	2	2	2
7	D-UA-BC09B-07-0	BC09B CABLE ASSY (7 FEET)	1	1	1	1
8	C-UA-MP15-UA-0	MEMORY EXPANSION 32K				
9	C-UA-MF15-UC-0	MEMORY EXPANSION 32K				
10	C-UA-MF15-UD-0	MEMORY EXPANSION 32K				
11	D-AD-7011524-0-0	WIRED ASSY (XM15)	1	1	1	1
12	D-IA-7011502-0-0	LOGIC POWER HARNESS VT48	1	1	1	1
13	D-AD-7010532-0-0	FULL DOOR UNIT ASSY 19"	1	1	1	1
14	C-IA-7006437-8-0	CABLE DUAL MYLAR M922-M922 (8 FEET)	1	1	1	1
15	C-IA-7008288-3F-0	CABLE ASSY (3-1/2 FEET)	1	1	1	1
16	D-IA-7407349-1-0	PANEL LOGO	1	1	1	1
17	D-MD-7414783-0-0	COVER CHASSIS, REWORK	1	1	1	1
18	B-MD-7413664-0-0	BRKT, LOCKING	4	4	4	4
19	C-MD-7407607-0-0	PLATE, JONES STRIP	1	1	1	1
20	C-MD-7409312-0-0	BRACKET, SHIPPING	3	3	3	3
21	1209224	LATCH MOLDING	4	4	4	4
22	D-UA-H950-HH-0	SHORT DOOR ASSY	1	1	1	1

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-0-0 | SHEET 5 OF 8 | SIZE A | CODE PL | NUMBER XM15-0-0 | REV B | ECO NO | DIST

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

PARTS LIST

MADE BY Fred Doll | CHECKED | SECTION
DATE 6/21/76 | DATE |
ENG Fred Doll | PROD | ISSUED SECT.
DATE 6/21/76 | DATE |

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION XM15-WN	XM15-WP	XM15-WR	XM15-WS
23	D-UA-H950-PB-0	COVER PANEL 5-1/4	2	2	2	2
24	9107646	TUBING, EXTRUDED 5/8" BLK	A/R	A/R	A/R	A/R
25	9107679	TUBING ZIPPER 1" BLK	A/R	A/R	A/R	A/R
26	9107673-6	POWER CORD #14 AWG	1	1	1	1
27	D-UA-M7172-0-0	15 MEM-UNIBUS INTERFACE	1	1	1	1
28	D-UA-M7173-0-0	MEMORY PORT	2	2	2	2
29	D-UA-M7174-0-0	IPF	1	1	1	1
30	D-UA-M7175-0-0	MEM MGR	1	1	1	1
31	D-UA-M7176-0-0	API	1	1	1	1
32	D-CS-M966-YA-1	PDP15 MEMORY BUS TERMINATOR	3	3	3	3
33	D-CS-M622-0-1	BUS DRIVER	2	2	2	2
34	D-CS-M621-0-1	DATA BUS DRIVER	4	4	4	4
35	D-CS-M910-0-1	CP TERMINATOR CARD	1	1	1	1
36	D-UA-M5921-0-0	BUS XCVR	3	3	3	3
37	D-CS-M930-0-1	BUS TERMINATOR	2	2	2	2
38	D-UA-G8270-0-0	LOW VOLT DET	1	1	1	1
39	9007651	WASHER EXT TOOTH #10	30	30	30	30
40	9006565	NUT, KEPS, HEX #10-32	2	2	2	2
41	9008887	STRAP JUMPER, BRAID WITH TERMINALS	1	1	1	1
42	9007786	NUT, TINNERMAN #10-32	41	41	41	41
43	9006074-3	SCR, PHL TRUSS HD #10-32 X 5/8	35	35	35	35
44	9006074-2	SCR, PHL FLAT HD #10-32 X 5/8	8	8	8	8

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-0-0 | SHEET 6 OF 8 | SIZE A | CODE PL | NUMBER XM15-0-0 | REV B | ECO NO | DIST

DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

PARTS LIST

MADE BY Fred Doll | CHECKED | SECTION
DATE 6/21/76 | DATE |
ENG Fred Doll | PROD | ISSUED SECT.
DATE 6/21/76 | DATE |

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION XM15-WN	XM15-WP	XM15-WR	XM15-WS
45	9006022-1	SCR, PHL HD #6-32 X 3/8	8	8	8	8
46	9006065-1	SCR, PHL PAN HD 1/4-20 X 2-1/4	2	2	2	2
47	9006077-1	SCR, PHL TRUSS HD #10-32 X 1	4	4	4	4
48	9009248-3	SCR, PHL TRUSS HD #10-32 X 1/4	4	4	4	4
49	9006560	NUT, KEPS	12	12	12	12
50	9006026-3	SCR, PHL TRUSS HD #6-32 X 3/4	4	4	4	4
51	9006899	TERMINAL BLOCK 4 TERM	1	1	1	1
52	9007929-1	CONN, SOLDERLESS #6	6	8	6	8
53	1204826	FAN, CABINET	-	1	-	1
54	1209175	GUARD, FINGER	-	1	-	1
55	9006653	WASHER, FLAT .375 O.D. X .156 I.D.	-	6	-	6
56	D-IA-7011827-0-0	CONTROL PANEL ASSY	1	1	1	1
57	1211825	SLIDE, CHASSIS, TILT 3 POSITION	1	1	1	1
58	C-IA-7008288-8F-0	CABLE ASSY (8 FEET)	1	1	1	1
59	D-UA-BC08A-8-0	BC08A CABLE (8 FEET)	1	1	1	1
60	A-DC-7407314-0-0	FAN HOUSING DECAL	1	-	1	-
61	A-DC-7406574-0-0	DECAL	-	1	-	1
62	9107370-22	WIRE #14 AWG RED	A/R	A/R	A/R	A/R
63	9007930	SOLDERLESS CONN #10	1	1	1	1
64	C-UA-MF15-WA	MEMORY EXPANSION (32K)	1	1	1	1
65	C-UA-MF15-WB	MEMORY EXPANSION (32K)	1	1	1	1
66	C-UA-MF15-WC	MEMORY EXPANSION (32K)	1			

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-0-0 | SHEET 7 OF 8 | SIZE A | CODE PL | NUMBER XM15-0-0 | REV B | ECO NO | DIST

DEC FORM DEC 16-(325)-1031-N870
DRA 110

DIGITAL EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

PARTS LIST

MADE BY Fred Doll | CHECKED | SECTION
DATE 6/21/76 | DATE |
ENG Fred Doll | PROD | ISSUED SECT.
DATE 6/21/76 | DATE |

ITEM NO	DWG NO. / PART NO.	DESCRIPTION	QUANTITY / VARIATION XM15-WN	XM15-WP	XM15-WR	XM15-WS
67	C-UA-MF15-WD	MEMORY EXPANSION (32K)		1		
68	C-UA-MF15-WE	MEMORY EXPANSION (64K)			1	
69	C-UA-MF15-WF	MEMORY EXPANSION (64K)				1

TITLE: MEMORY PROCESSOR (XM15) | ASSY NO. D-UA-XM15-0-0 | SHEET 8 OF 8 | SIZE A | CODE PL | NUMBER XM15-0-0 | REV B | ECO NO | DIST

NOTES:
1. FOR DRAWING DIRECTORY REFER TO: B-DD-M7172-Φ.
2. REF DESIGNATIONS C64 THRU C69 ARE NOT USED.
3. E6 E33 AND E62 ARE SPARE IC LOCATIONS.
4. UNLESS OTHERWISE SPECIFIED THE FOLLOWING PIN NUMBERS APPLY.

PACKAGE TYPE	+5.0V	GND
16 PIN DIP	16	8
14 PIN DIP	14	7
IC. 75452	8	4
IC. 8640	8	1

ETCH CUTS SIDE #1 AS SHOWN
1. CUT ETCH AT E19 (8)
2-3-4. CUT ETCH AT C62, THREE PLACES.
5-6-7. CUT ETCH AT C63, THREE PLACES.

ETCH CUTS SIDE #2 AS SHOWN
1. CUT ETCH AT E28 (13)

WIRE ADDS SIDE #1 AS SHOWN
1. ADD WIRE FROM E19 (9) TO P.T.H. AT E19 (8)
2. ADD WIRE FROM PTH CONNECTED TO FINGER CM1 TO E53 (6)
3. ADD WIRE FROM E28 (13) TO E24 (5)
4. ADD WIRE FROM PTH CONNECTED TO FINGER CL1 TO E53 (7)
5. ADD WIRE FROM PTH CONNECTED TO RIØ TO E1Ø (1).
6. ADD WIRE FROM PTH CONNECTED TO R11 TO PTH NEAR E5Ø (1).

COMPONENT CHANGE
1. CONNECT ONE LEAD OF C62 TO R9 AND R1Ø.
2. CONNECT ONE LEAD OF C63 TO R11 AND R12.

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011437B	1
63	C1 THRU C63	CAP. 10nf 100V	1001610-01	2
4	C70 THRU C73	CAP. 6.8uf 10% 35V	1005306	3
4	R1, R2, R7, R8	RES. 220 5% ¼W	1300271	4
4	R3, R5, R9, R11	RES. 330 5% ¼W	1300295	5
1	R13	RES. 1K 5% ¼W	1300385	6
2	R10, R12	RES. 750 5% ¼W	1301401	7
2	R4, R6	RES. 680 5% ¼W	1301424	8
4	E1, E7, E21, E26	RES/PAC	1311003-01	9
2	E53, E58	RES/PAC	1311003-02	10
2	DL1, DL2	DELAY LINE 100NS	1610033	11
1	, E15	I.C. DEC 7400	1905575	12
2	E11, E20	I.C. DEC 7402	1909004	13
1	E23	I.C. DEC 74H74	1909667	14
5	E41, E46, E51, E56, E61	I.C. DEC 74S00	1910532	15
8		EYELET	9006732	16
7	E14, E16, E25, E35, E36, E43, E48	I.C. DEC 74S04	1910534	17
2	E5, E37	I.C. DEC 74S11	1910537	18
.	E13	I.C. DEC 74S20	1910539	19
1	E24	I.C. DEC 74H22	1910055	20
9	E10, E16, E19, E28, E29, E34, E39, E40, E50	I.C. DEC 74S74	1910544	21
2	E44, E45	I.C. DEC 74S174	1910550	22
2	E2, E3	I.C. DEC 75452	1910645	23
6	E9, E38, E42, E47, E52, E57	I.C. DEC 74S175	1910957	24
6	E49, E54, E55, E59, E60, E32	I.C. DEC 7438	1911219	25
3	E4, E8, E12	I.C. DEC 8640	1911469	26
5	E17, E22, E27, E30, E31	I.C. DEC 8641	1911579	27
2	S1, S2	SWITCH/PAC	1211164-04	28
2	XS1, XS2	SWITCH COVER	1211284-04	29
4		HANDLE, FLIP CHIP, MAGENTA	9008337-06	30

PARTS LIST

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL: XM15

ETCH BOARD REV

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV.	CHANGE NO.	ORIGINATED	CHK
A		F. DOLL 12-12-75	
B	M7172-00001	4-12-75	

DRN R.W. Counter DATE 6-12-75
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

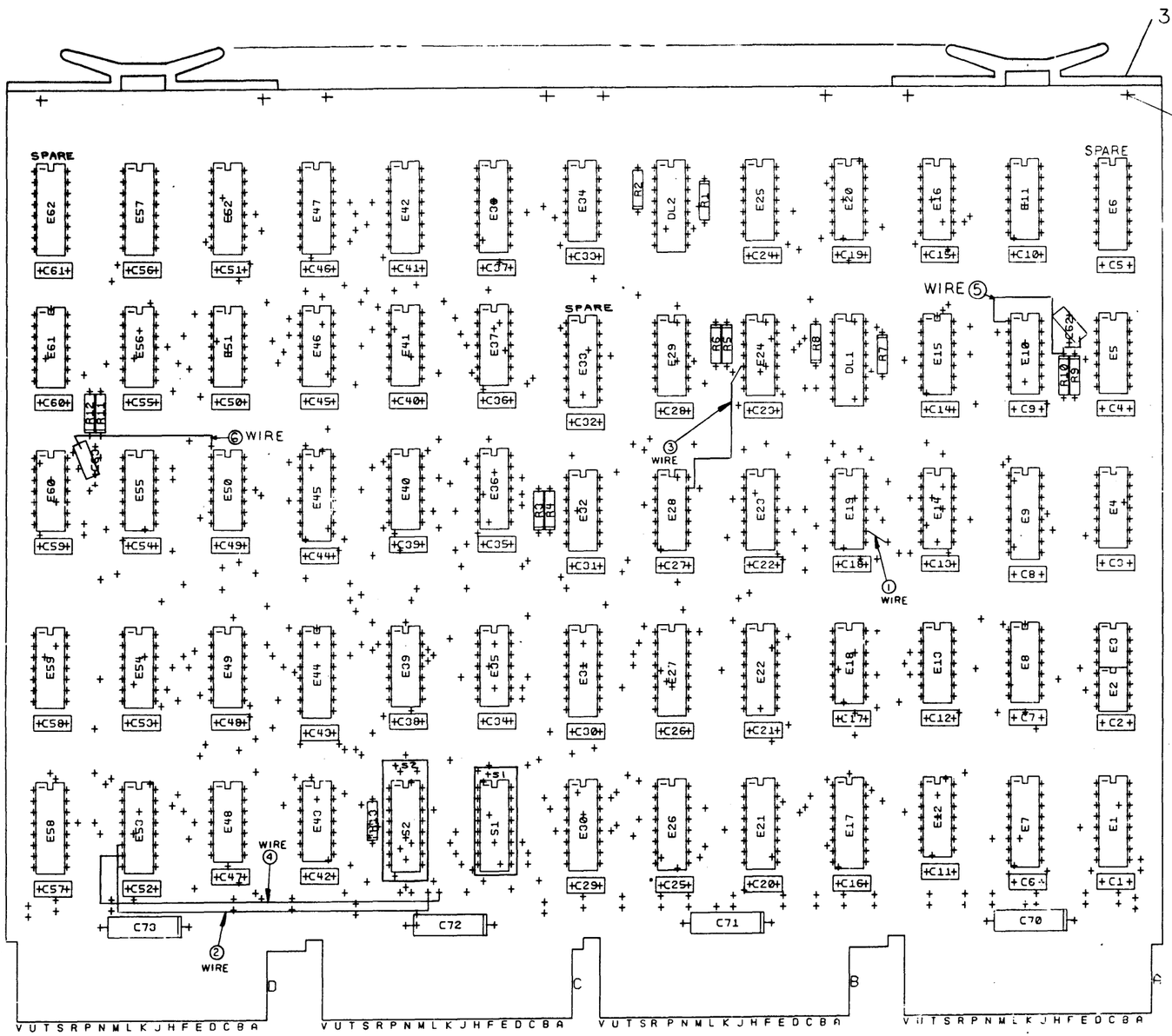
NEXT HIGHER ASSY: B-DD-M7172-Φ

SCALE —
SHEET 1 OF 5

digital

TITLE: 15 MEM-UNIBUS INTERFACE

SIZE D | CODE UA | NUMBER M7172-Φ-Φ | REV. B

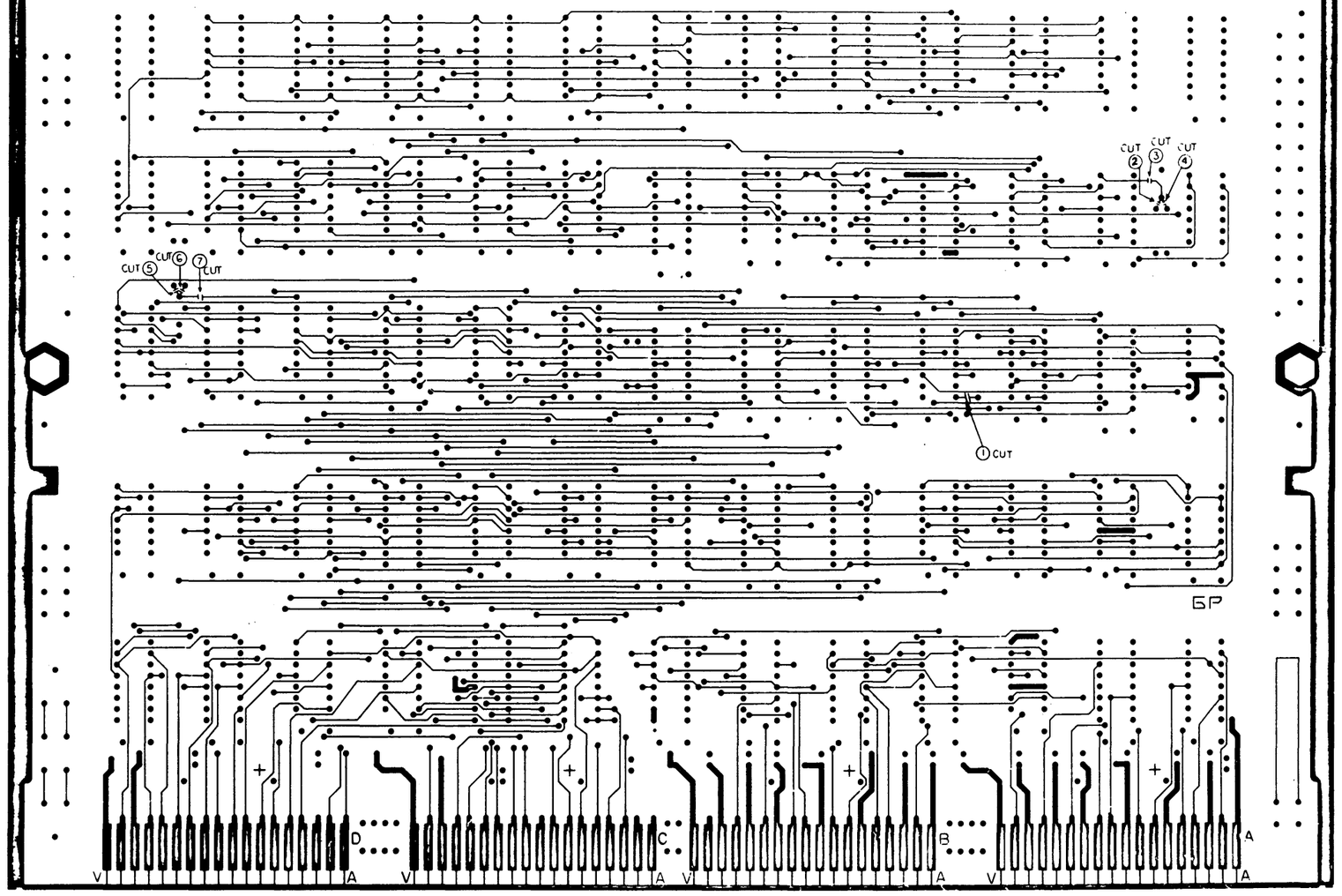


REVISION		
UNIT	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV
15 MEM-UNIBUS INTERFACE	D	UA	M7172-0-0	B
SCALE —	SHEET 2 OF 5			

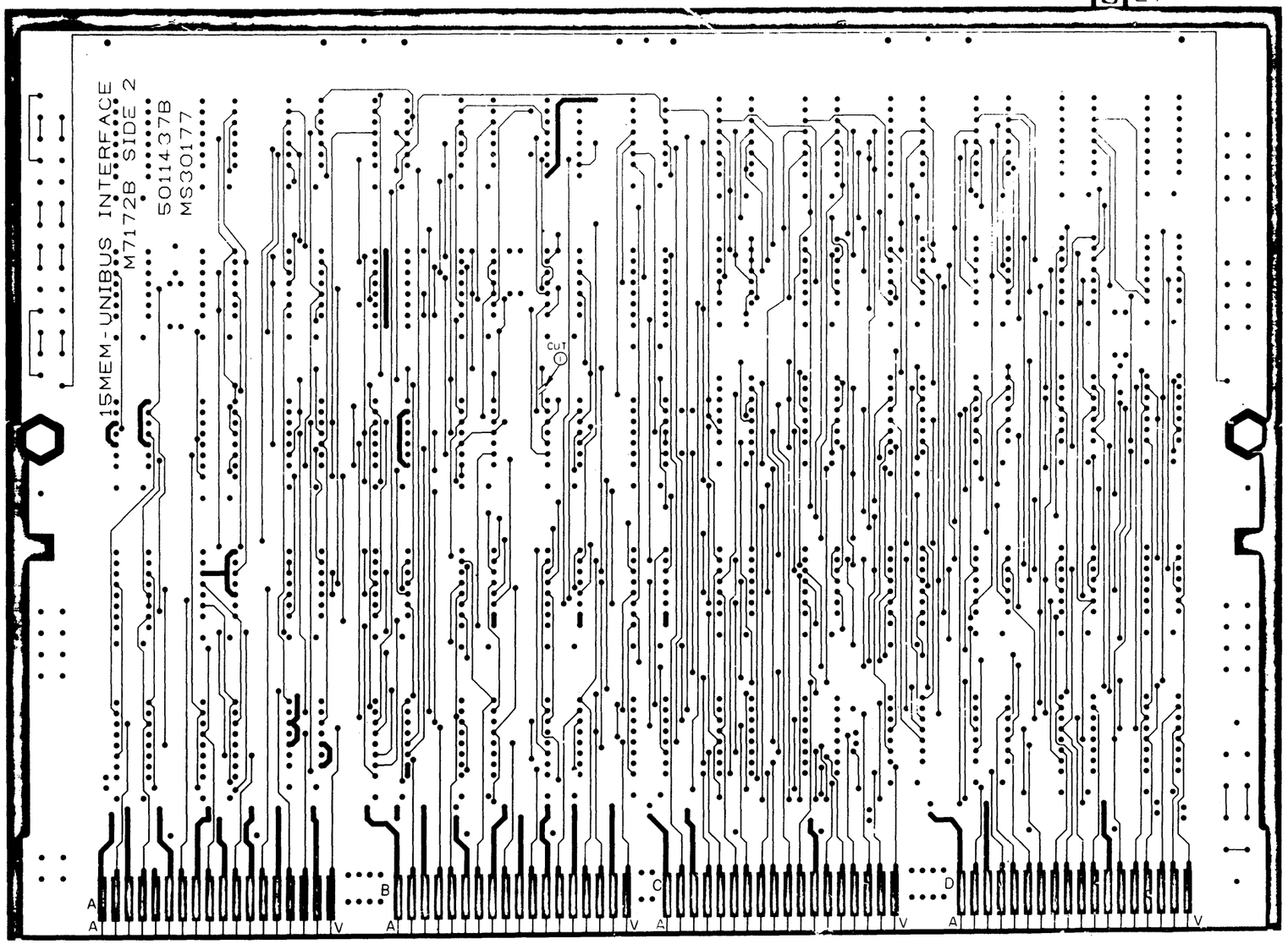
L1 MS30177 5011437B M7172B

CS*ABCDEFHJKLMNPRS SIDE 1 FLIP CHIP ®



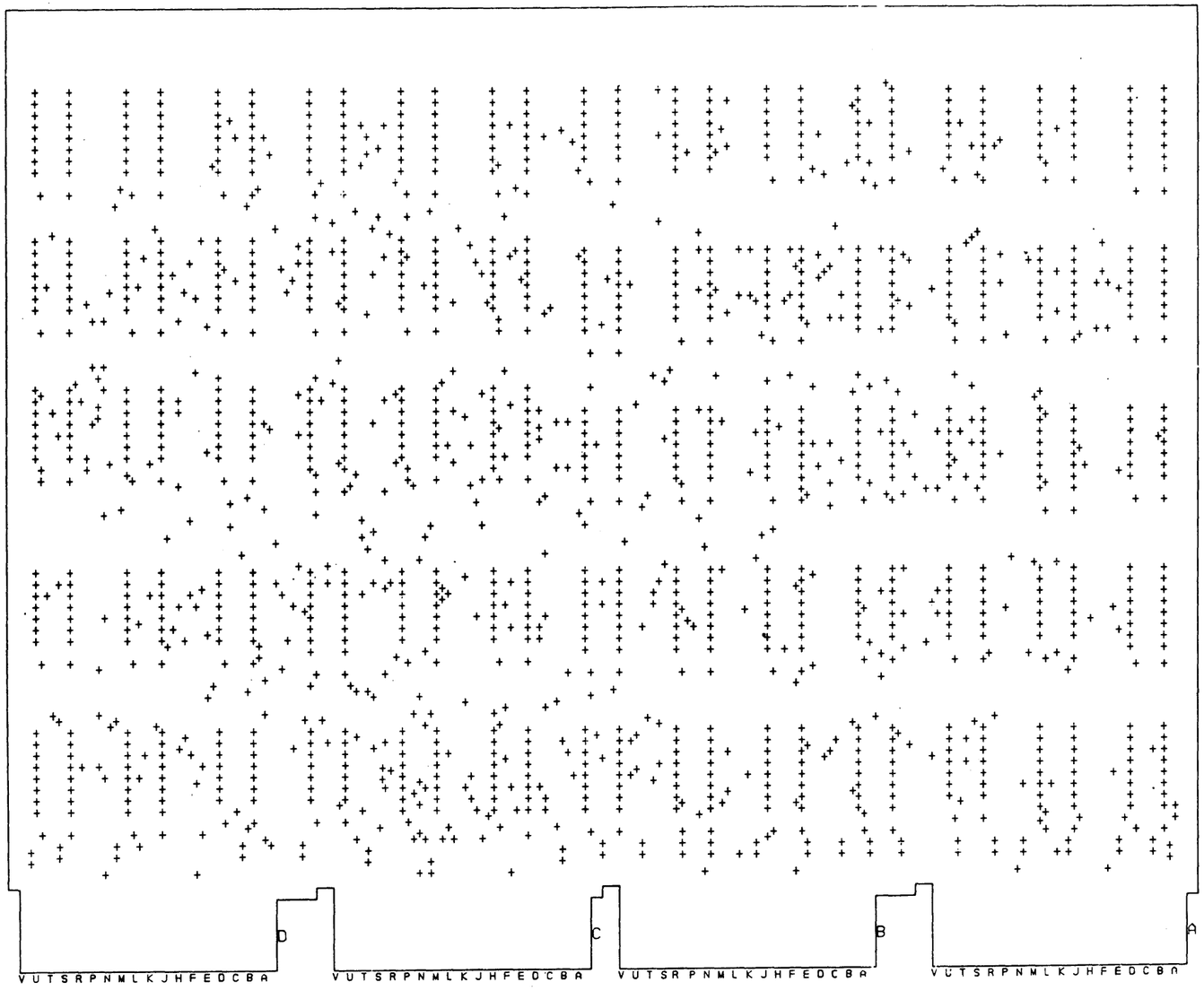
(LAYER 1)

TITLE			
15 MEM-UNIBUS INTERFACE	D	UA	M7172-0-0 B
SCALE —	SHEET 3 OF 5		



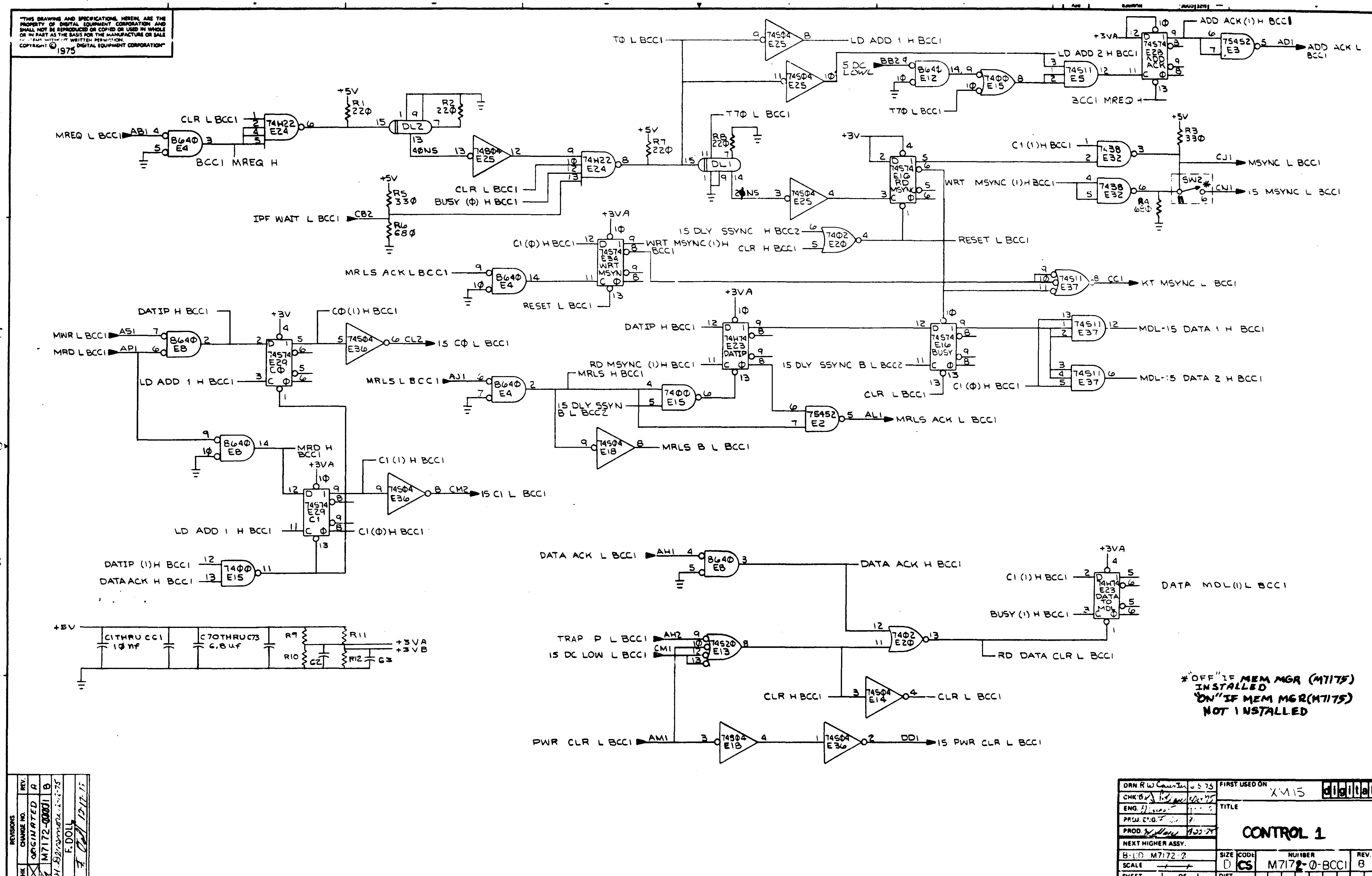
TITLE	SIZE	CODE	NUMBER	REV
15 MEM-UNIBUS INTERFACE	D	UA	M7172-0-0	B

SHEET 4 OF 5



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
15 MEM-UNIBUS INTERFACE	D	UA	M7172-0-0	B
SCALE —	SHEET 5 OF 5	DIST		



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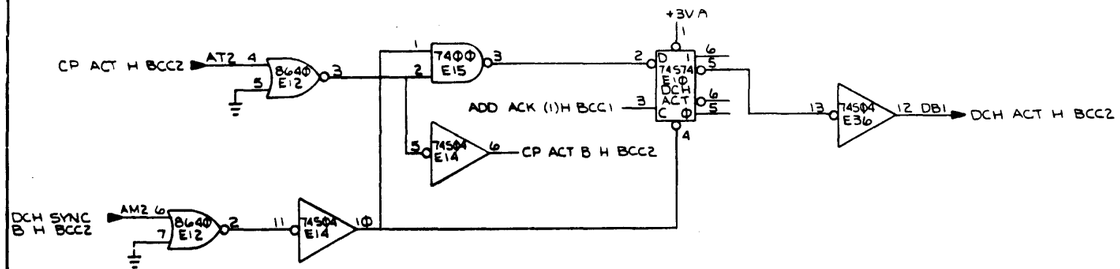
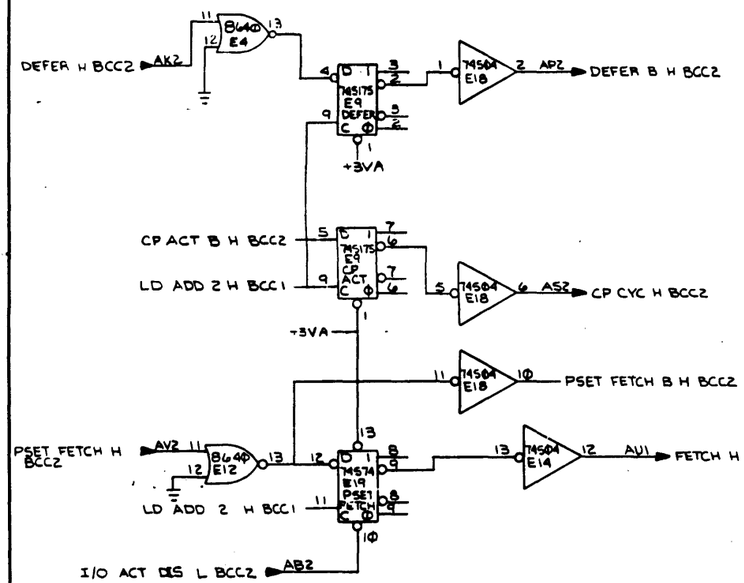
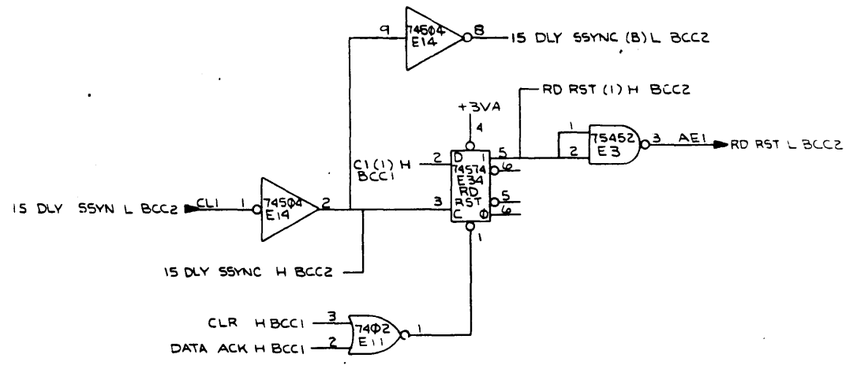
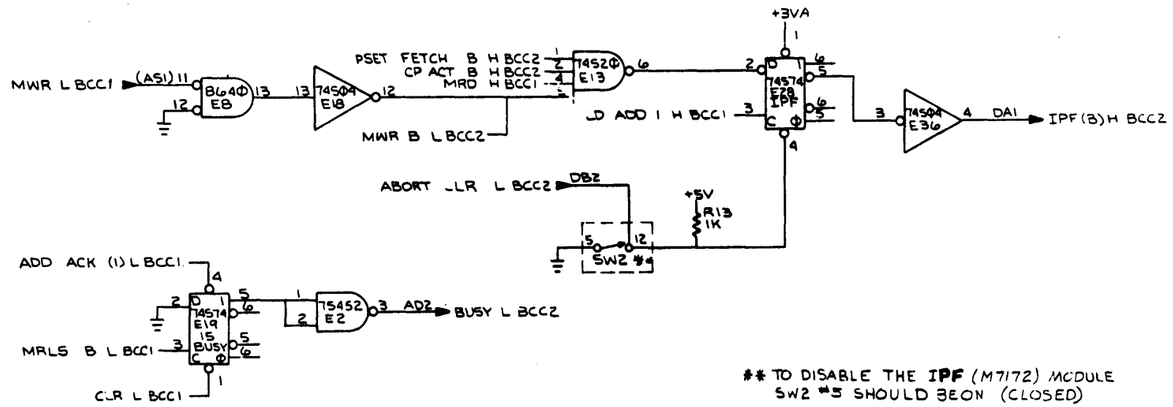
MREQ L BCC1
CLR L BCC1
BCC1 MREQ H
T0 L BCC1
LD ADD 1 H BCC1
LD ADD 2 H BCC1
5 DC LOWL
BCC1 MREQ H
T70 L BCC1
ADD ACK (1) H BCC1
ADD ACK L BCC1
IPF WAIT L BCC1
CLR L BCC1
BUSY (0) H BCC1
40NS
20NS
C1 (1) H BCC1
MSYNC L BCC1
WRT MSYNC (1) H BCC1
15 MSYNC L BCC1
15 DLY SSYNC H BCC2
CLR H BCC1
RESET L BCC1
C1 (0) H BCC1
WRT MSYNC (1) H BCC1
MRLS ACK L BCC1
KT MSYNC L BCC1
DATIP H BCC1
C0 (1) H BCC1
MWR L BCC1
MRD L BCC1
15 C0 L BCC1
LD ADD 1 H BCC1
MDL-15 DATA 1 H BCC1
RD MSYNC (1) H BCC1
MRLS H BCC1
15 DLY SSYNC B L BCC2
CLR L BCC1
C1 (0) H BCC1
MDL-15 DATA 2 H BCC1
MRLS L BCC1
15 DLY SSYN B L BCC2
MRLS ACK L BCC1
MRLS B L BCC1
MRD H BCC1
C1 (1) H BCC1
15 C1 L BCC1
LD ADD 1 H BCC1
C1 (0) H BCC1
DATIP (1) H BCC1
DATA ACK H BCC1
DATA ACK L BCC1
DATA ACK H BCC1
C1 (1) H BCC1
DATA MDL (1) L BCC1
BUSY (1) H BCC1
TRAP P L BCC1
15 DC LOW L BCC1
RD DATA CLR L BCC1
CLR H BCC1
CLR L BCC1
PWR CLR L BCC1
15 PWR CLR L BCC1
C1 THRU C C1 10 nf
C70 THRU C73 6.8 uf
+3VA
+3VB
*"OFF" IF MEM MGR (M7175) INSTALLED
"ON" IF MEM MGR (M7175) NOT INSTALLED
REVISIONS
ORIGINATED A
M7172-00001 B
FIRST USED ON XM15
digital
TITLE CONTROL 1
NEXT HIGHER ASSY. B-UD M7172-0
SIZE D CODE CS NUMBER M7172-0-BCC1 REV. B
SHEET 1 OF 1





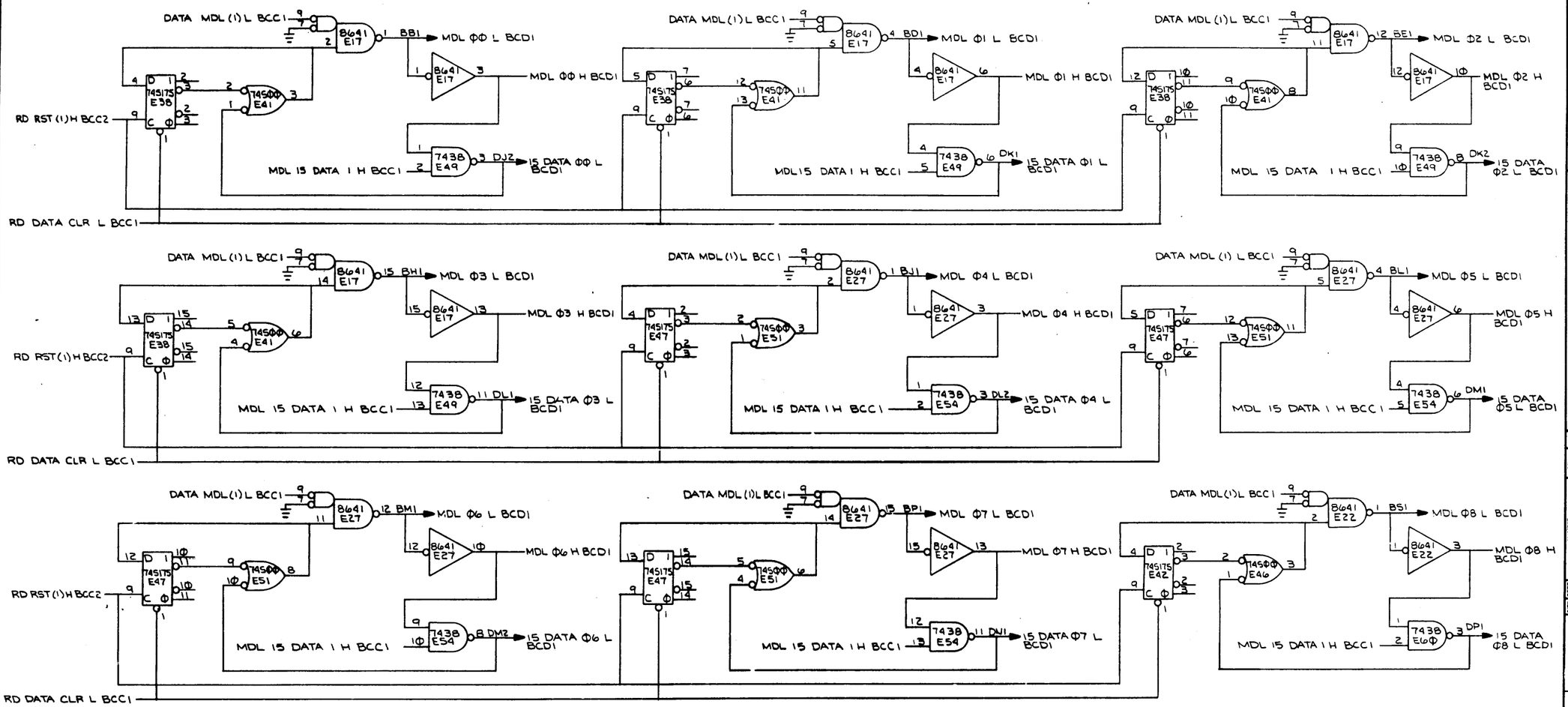




** TO DISABLE THE **IPF** (M7172) MODULE SW2 #5 SHOULD BE ON (CLOSED)

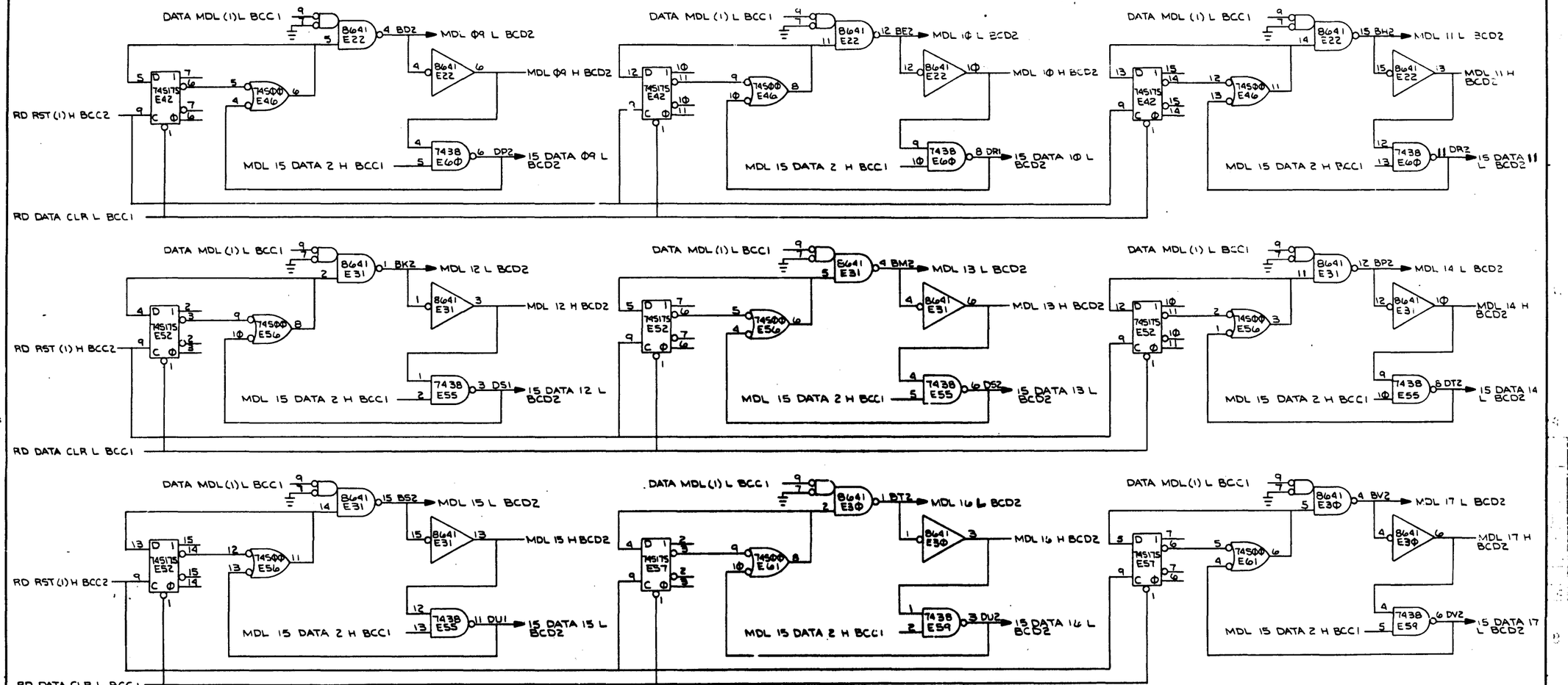
REVISIONS		
REV.	CHANGE NO.	CHK
Ø	ORIGINATED	X

DRN. R W C	6-6-75	FIRST USED ON XM15
CHK B W	6-6-75	digital
ENG.		TITLE
PROJ. ENG.		CONTROL 2
PROD.	6-23-75	
NEXT HIGHER ASSY.		
B-DD-M7172-Ø		SIZE D CODE CS NUMBER M7172-Ø-BCC2 REV. A
SCALE		
SHEET 1 OF 1		DIST.



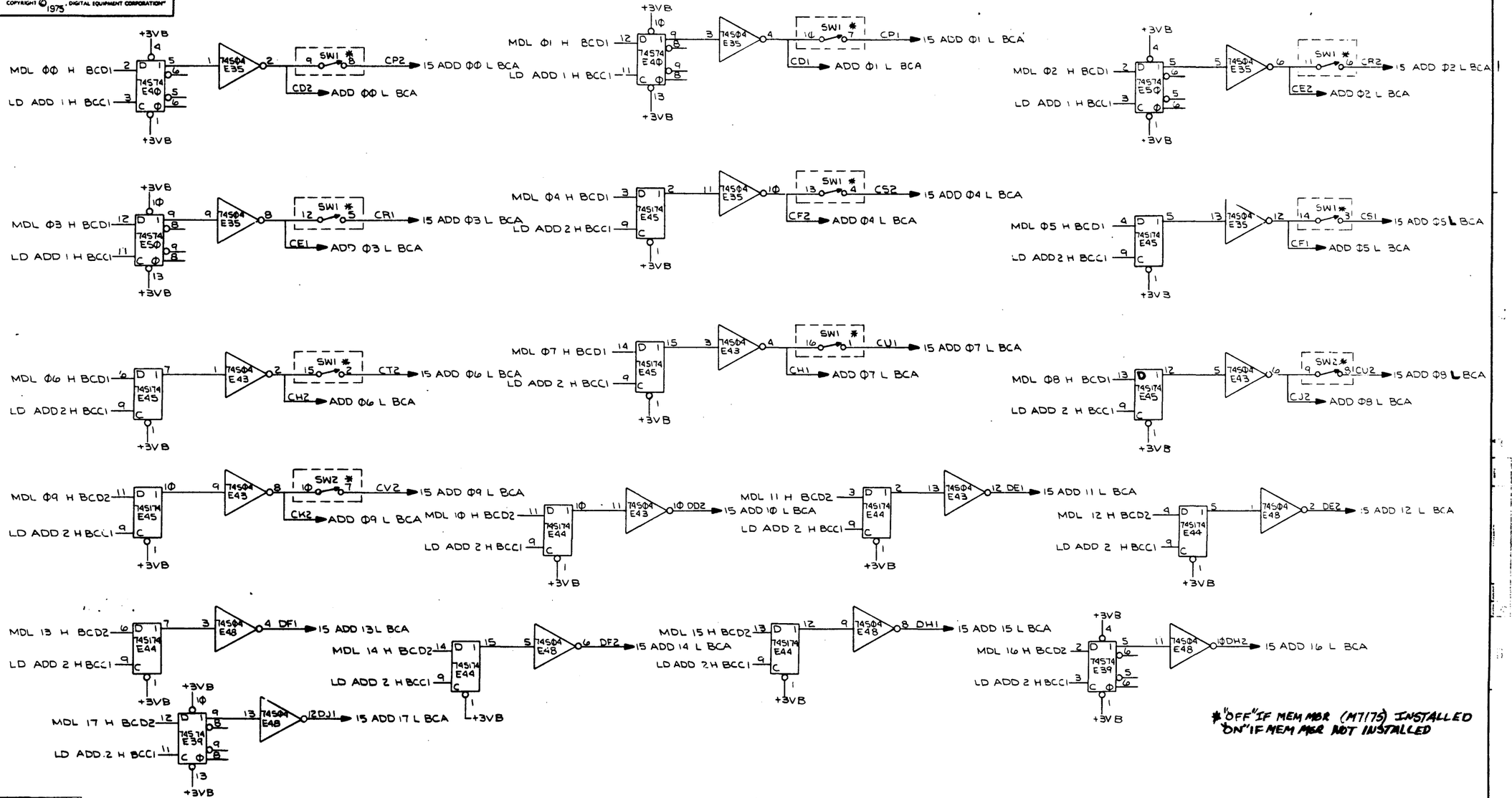
REVISIONS		
CHK	CHANGE NO.	REV.
	DESIGNATED	A

DRN. R W Cannon	6-2-75	FIRST USED ON XM15
CHK'D		TITLE DATA Ø-8
ENG.		
PROJ. ENG.		
PROD		
NEXT HIGHER ASSY.		
B DD-M7172-Ø		SIZE D CODE CS NUMBER M7172-Ø-BCD1 REV. A
SCALE		
SHEET 1 OF 1		DIST.



REVISIONS		
CHK	CHANGE NO.	REV.
X	ORIGINATED	A

DRN. R.W. Counter	6-10-75	FIRST USED ON XM15
CHK'D		
ENG.	9-11-75	TITLE
PROJ. ENG.		DATA 9-17
PROD.		
NEXT HIGHER ASSY.		
B-DD-M7172-Ø		SIZE D CODE CS NUMBER M7172-9-BCD2 REV. A
SCALE		
SHEET 1 OF 1		DIST.



*"OFF" IF MEM MBR (M7175) INSTALLED
"ON" IF MEM MBR NOT INSTALLED

REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINATED	A
	M7172-00001	B

DRAWN	R W Counter	6-11-75
CHK'D		
ENG.		
HW. ENG.		
PROD.		
NEXT HIGHER ASSY.		
B-DD-M7172-0		
SCALE		
SHEET	1 OF 1	

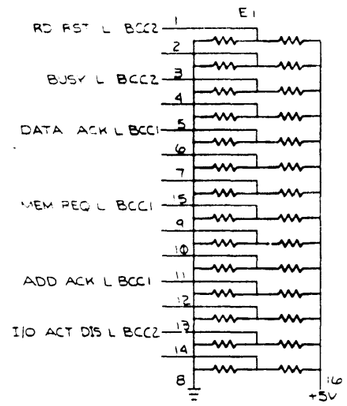
FIRST USED ON XM15

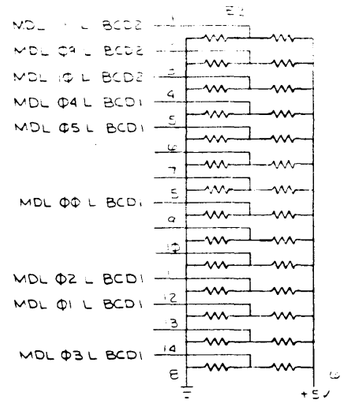
digital

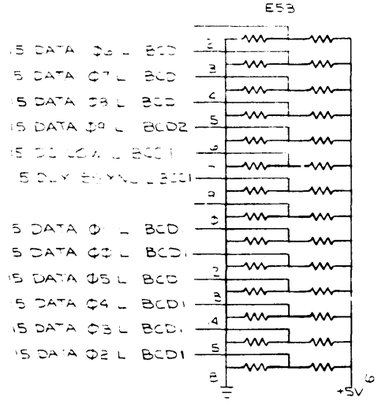
TITLE **ADDRESS REGISTER**

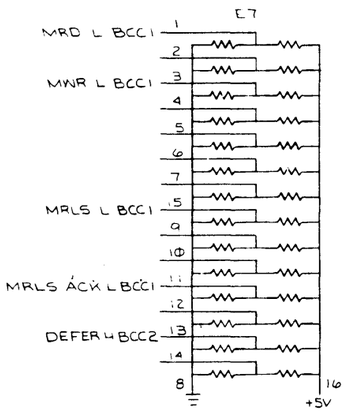
SIZE	CODE	NUMBER	REV.
D	CS	M7172-Φ-BCA	B

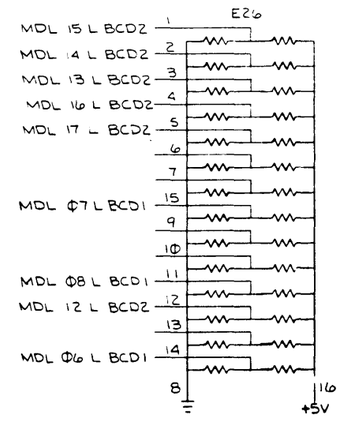
DIST.

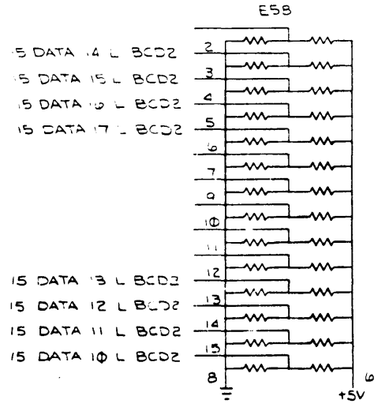












REVISIONS		
CHK	CHANGE NO.	REV.
X	ORIGINATED	A

DRN. P	6-12-75	FIRST USED ON XM15 digital
CHK'D.		
ENG.		TITLE
PROJ. ENG.		TERMINATORS
PROD.		
NEXT HIGHER ASSY		
B-DD-M7172-0		SIZE D CODE CS NUMBER M7172-0-BCT REV. A
SCALE		
SHEET 1 OF 1		DIST

NOTES:

1. FOR DRAWING DIRECTORY, REFER TO: B-DD-M7173-0
2. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND
14 PIN DIP	14	7
16 PIN DIP	16	8
I.C. DEC 8640	8	1
I.C. DEC 75453	8	4

3. THE FOLLOWING REF. DESIGNATIONS ARE NOT USED: C85 THRU C109, W1 THRU W5 & W10.

ETCH CUTS SIDE #1 AS SHOWN:

1. CUT ETCH FROM E46(7) TO E41(2)
2. CUT ETCH FROM E47(2) TO P.T.H. CONNECTED TO E47(2)
3. CUT ETCH FROM E65(15) TO P.T.H. CONNECTED TO E65(15)
4. CUT ETCH AT PTH NEAR E71 (7).

5-6. CUT ETCH UNDER E86 AT E86(3). TWO PLACES.

7. CUT ETCH BETWEEN E44(5) AND E44(6).
8. CUT ETCH BETWEEN E71(10) AND E71(11).
9. CUT ETCH AT E72(4).

ETCH CUTS SIDE #2 AS SHOWN:

1. CUT ETCH FROM E65(16) TO E65(14)
2. CUT ETCH FROM P.T.H. NEAR E44(8) TO P.T.H. NEAR E45(13,14)
3. CUT ETCH AT E71(5).
4. CUT ETCH AT P.T.H. NEAR E71 (6).
5. CUT ETCH AT E44(10).
6. CUT ETCH AT E44(12).

WIRE ADDS SIDE #1 AS SHOWN:

1. ADD WIRE FROM E46(7) TO P.T.H. CONNECTED TO E44(9)
2. ADD WIRE FROM E47(2) TO E50(5)
3. ADD WIRE FROM E65(16) TO P.T.H. PREVIOUSLY CONNECTED TO E65(15)
4. ADD WIRE FROM E65(15) TO E65(9)
5. ADD WIRE FROM E45(7) TO P.T.H. NEAR E45(13,14)
6. ADD WIRE FROM E71(12) TO E71(7).
7. ADD WIRE FROM E77(B) TO E71(1).
8. ADD WIRE FROM E86(1) TO E71(5).
9. ADD WIRE FROM E86(3) TO E81(4).
10. ADD WIRE FROM E44(8) TO P.T.H. PREVIOUSLY CONNECTED TO E44(12).
11. ADD WIRE FROM E54(2) TO E44(10). DO NOT SOLDER.
12. ADD WIRE FROM P.T.H. NEAR E77(11) TO E54(2). SOLDER #11 AND #12.
13. ADD WIRE FROM E44(11) TO E44(12).

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

PARTS LIST

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCH CIRCUIT BOARD	5011890	1
86	C1 THRU C84, C110, C118	CAP. .01uf 100V	1001610 01	2
1	C111	CAP. 270pf 5% 100V	1000022	3
6	C112 THRU C117	CAP. 6.8uf 10% 35V	1005308	4
2	R1, R12	RES. 750 5% ¼W	1301401	5
3	R2, R4, R13	RES. 330 5% ¼W	1300295	6
1	R3	RES. 20K 5% ¼W	1302391	7
1	R5	RES. 680 5% ¼W	1301424	8
6	R6 THRU R11	RES. 220 5% ¼W	1300271	9
3	DL1, DL2, DL3	DELAY, 10-100NS, 9 TAPS	1610033	10
10	E1, E2, E3, E4, E7, E16, E19, E20, E25, E30	I.C. DEC 8641	1911579	11
2	E5, E64	I.C. DEC 7400	1905575	12
11	E6, E42, E48, E49, E58, E62, E64, E67, E68, E73, E77	I.C. DEC 74S04	1910534	13
6	E8, E12, E13, E69, E74, E75	I.C. DEC 74S174	1910550	14
1	E9	I.C. DEC 74123	1910436	15
3	E10, E11, E41	I.C. DEC 8640	1911469	16
3	E14, E54, E57	I.C. DEC 74S00	1910532	17
2	E15, E46	I.C. DEC 75453	1911036	18
5	E17, E21, E22, E26, E27	I.C. DEC 8266	1909934	19
6	E18, E44, E45, E50, E80, E86	I.C. DEC 74S11	1910537	20
2	E23, E32	I.C. DEC 7474	1905547	21
4	E24, E29, E33, E37	RES NETWORK 14-180 & 14-390	1311003-01	22
9	E28, E53, E55, E70, E71, E81, E85 [illegible], E82	I.C. DEC 74S74	1910544	23
5	E31, E34, E35, E38, E39	I.C. DEC 8881	1909705	24
1	E36	I.C. DEC 74S22	1910540	25
1	E40	I.C. DEC 7402	1909004	26
2	E43, E65	SW, RKR DIP PKG W/8 SW	1211164-04	27
2	E47, E63	I.C. DEC 74H22	1910055	28
6	E51, E56, E61, E78, E79, E83	I.C. DEC 8097	1911527	29
2	E52, E76	I.C. DEC 74S20	1910539	30
1	E60	I.C. DEC 7438	1911219	31
2	E66, E72	I.C. DEC 74S10	1910536	32
6	W6, W7, W8, W9, W11, W12	JUMPER, WHT INSULATED	9009185	33
12		EYELET, HANDLE	9006732	34
1		HANDLE ASSY	1210711-02	35

FIRST USED ON OPTION MODEL
XM15

ETCH ~~BOARD REV.~~

REV.	CHANGE NO.	ORIGINATED	CHK
A	M7173-C0001	ORIGINATED	F. DOLL 22 JAN 76; H. ... 15 JAN 76

REVISIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

		DATE
DRN.	E. Wilson	6/25/75
CHK'D.		
ENG.		
PROJ. ENG.		
PROD.		

NEXT HIGHER ASSY: B-DD-M7173-0

digital

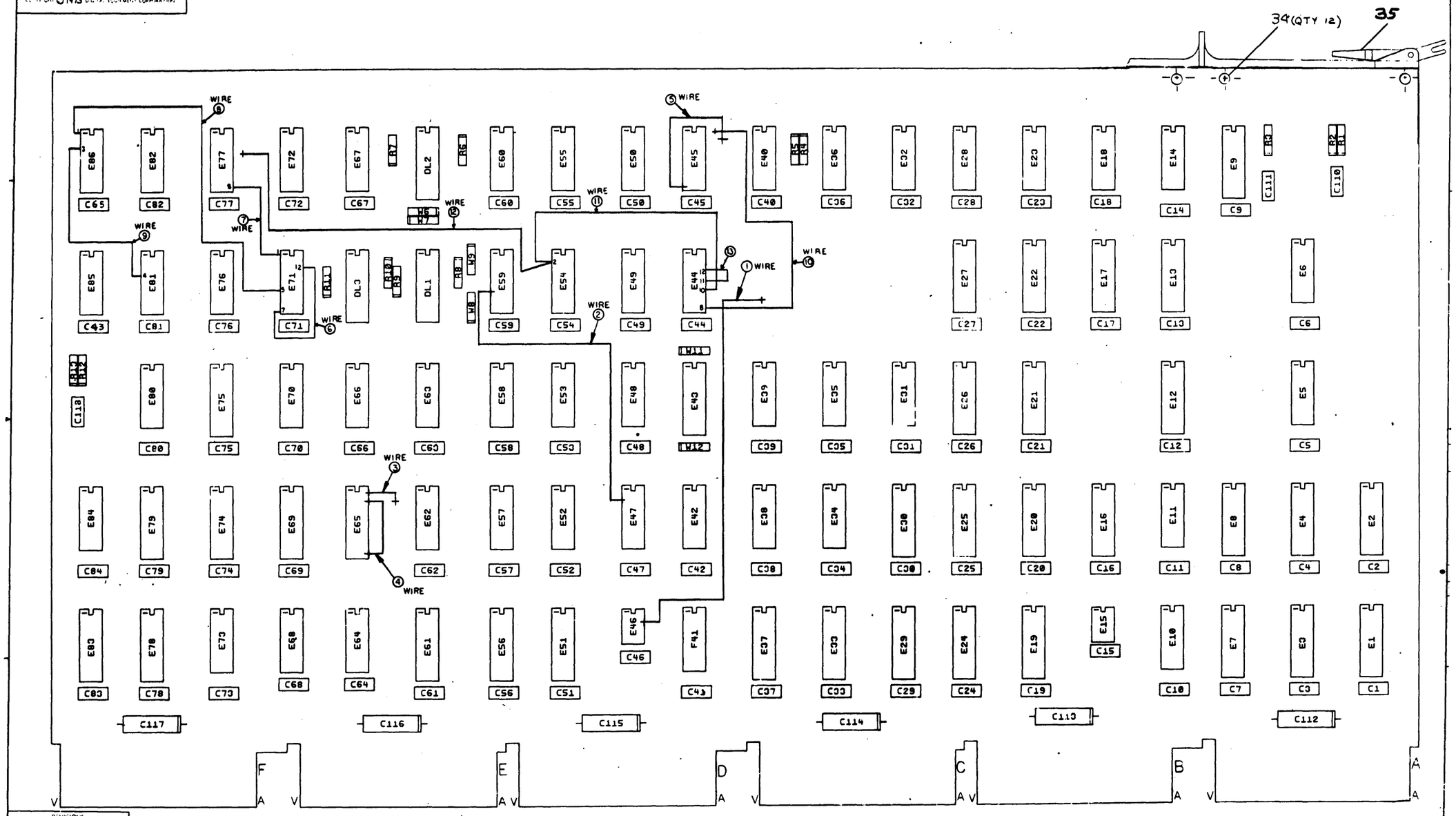
TITLE: MEMORY PORT

SIZE	CODE	NUMBER	REV.
D	UA	M7173-0-0	A

SCALE

SHEET 1 OF 4

DIST.



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV
MEMORY PORT	D	UA	M7173-0-0	A
SCALE	SHEET 2 OF 4	DIST		

LAYER 1

MS30168 M7173 5011690A

CS*ABCDEFHJKLMNPRS

SIDE 1

FLIP CHIP

E86 E82 E77 E72 E67 DL2 E60 E55 E50 E45 E40 E36 E32 E28 E23 E18 E14 E9

CUT ⑤ CUT ⑥ CUT ⑨ CUT ⑧ CUT ④ CUT ⑦ CUT ③ CUT ① CUT ②

F E D C B A

V A V A V A V A V A

	CHANGE NO.								

TITLE: MEMORY PORT

D UA M7173-Ø-Ø A

SCALE: 1 SHEET 3 OF 4

LAYER 4

L4

MS3016 M7173 5011690A SIDE 2

MEMORY PORT

CUT 1
CUT 2
CUT 3
CUT 4
CUT 5
CUT 6

A B C D E F

A V A V A A V A V A

REVISIONS										
CHK	CHANGE NO									

TITLE	SIZE	CODE	NUMBER	REV
MEMORY PORT	D	UA	M7173-0-0	A
SCALE	SHEET 4 OF 4		DWG	

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS	REMARKS
1	A	
2	A	(PRS)
3	A	(PMPS)
4	A	(PMC)
5	A	(MPA)
6	A	(MPD1)
7	A	(MPD2)
8	A	(MPD3)
9	A	(MPT)

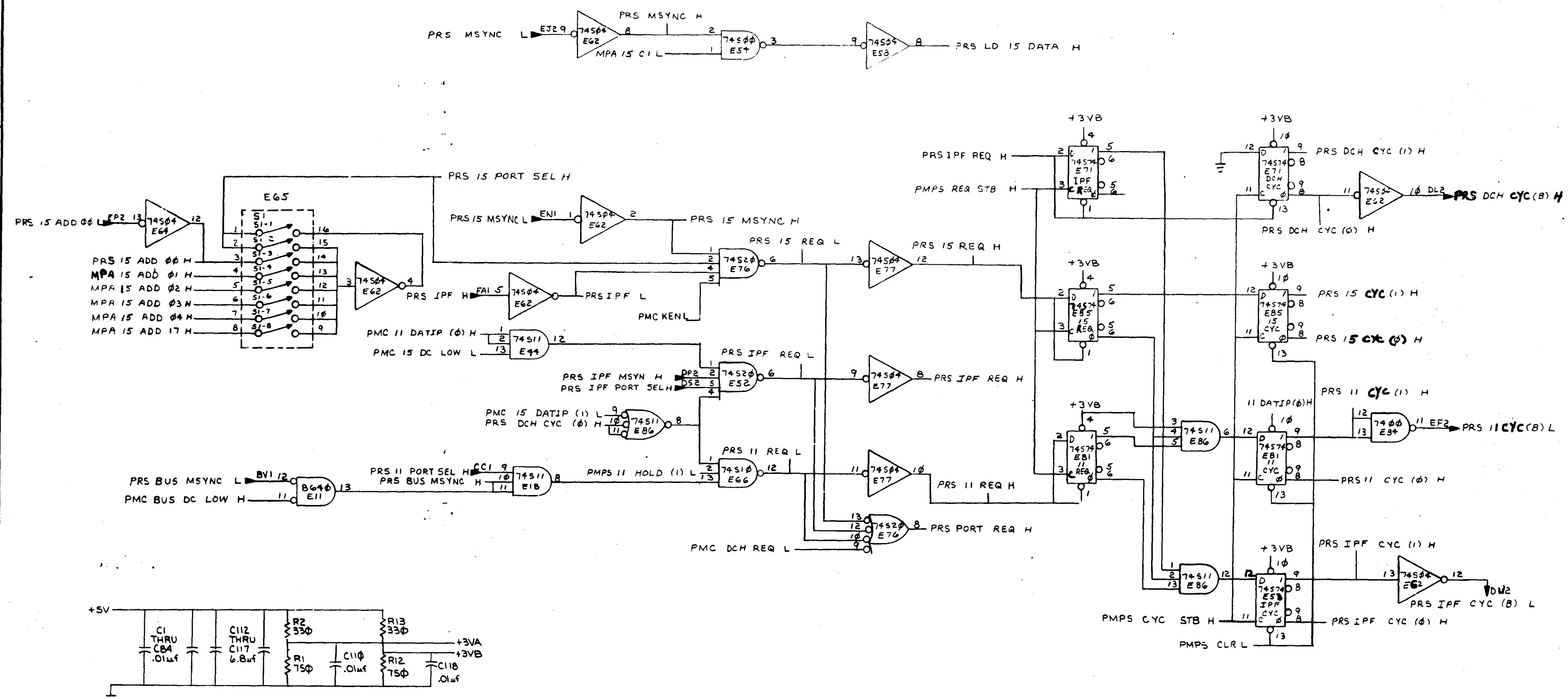
ECO NO.	M7173-1																		
ETCH REV.	-																		
ENG.	ED																		
DATE	19Jan76																		

FIRST USED ON OPTION/MODEL
XM15

DRN. E. Wilson	DATE 5/27/75	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D. P.J. LeBlanc	DATE 3 Oct75	
ENG. G. Creaser	DATE 9/19/75	TITLE: MEMORY PORT
PROJ. ENG. F. Doll	DATE 9/19/75	
PROD. W. Shaw	DA 9/22/75	

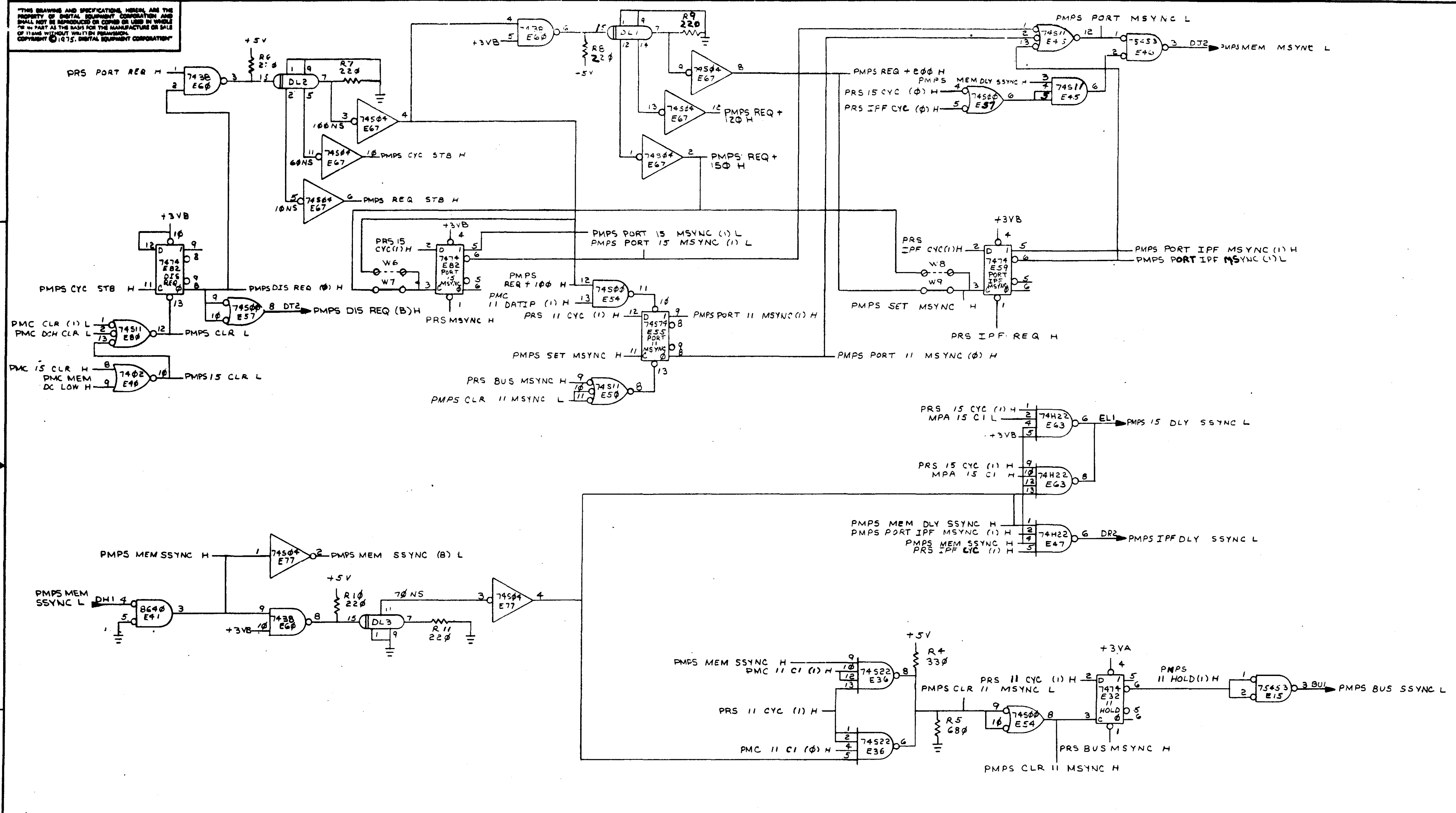
NEXT HIGHER ASSY.	SIZE	CODE	NUMBER	REV.
B-DD-M7173-0	B	CS	M7173-0-1	A
SCALE				
SHEET 1 OF 9	DIST.			

DRB 110


PRS MSYNC L
PRS MSYNC H
MPA 15 C1 L
PRS LD 15 DATA H
PRS 15 PORT SEL H
E65
PRS 15 ADD ØØ L
PRS 15 ADD ØØ H
MPA 15 ADD Ø1 H
MPA 15 ADD Ø2 H
MPA 15 ADD Ø3 H
MPA 15 ADD Ø4 H
MPA 15 ADD 17 H
PRS IPF H
PRS 15 MSYNC L
PRS 15 MSYNC H
PRS IPF L
PMC KEN L
PRS 15 REQ L
PRS 15 REQ H
PMC 11 DATIP (Ø) H
PMC 15 DC LOW L
PRS IPF REQ L
PRS IPF MSYN H
PRS IPF PORT SEL H
PRS IPF REQ H
PMC 15 DATIP (1) L
PRS DCH CYC (Ø) H
PRS BUS MSYNC L
PMC BUS DC LOW H
PRS 11 PORT SEL H
PRS BUS MSYNC H
PMPS 11 HOLD (1) L
PRS 11 REQ L
PRS 11 REQ H
PRS PORT REQ H
PMC DCH REQ L
PRS IPF REQ H
PMPS REQ STB H
+3VB
PRS DCH CYC (1) H
PRS DCH CYC (B) H
PRS DCH CYC (Ø) H
PRS 15 CYC (1) H
PRS 15 CYC (Ø) H
PRS 11 CYC (1) H
11 DATIP (Ø) H
PRS 11 CYC (B) L
PRS 11 CYC (Ø) H
PRS IPF CYC (1) H
PRS IPF CYC (B) L
PMPS CYC STB H
PRS IPF CYC (Ø) H
PMPS CLR L
+5V
C1 THRU C84 .01uf
C112 THRU C117 6.8uf
R2 33Ø
R13 33Ø
R1 75Ø
C11Ø .01uf
R12 75Ø
C118 .01uf
+3VA
+3VB

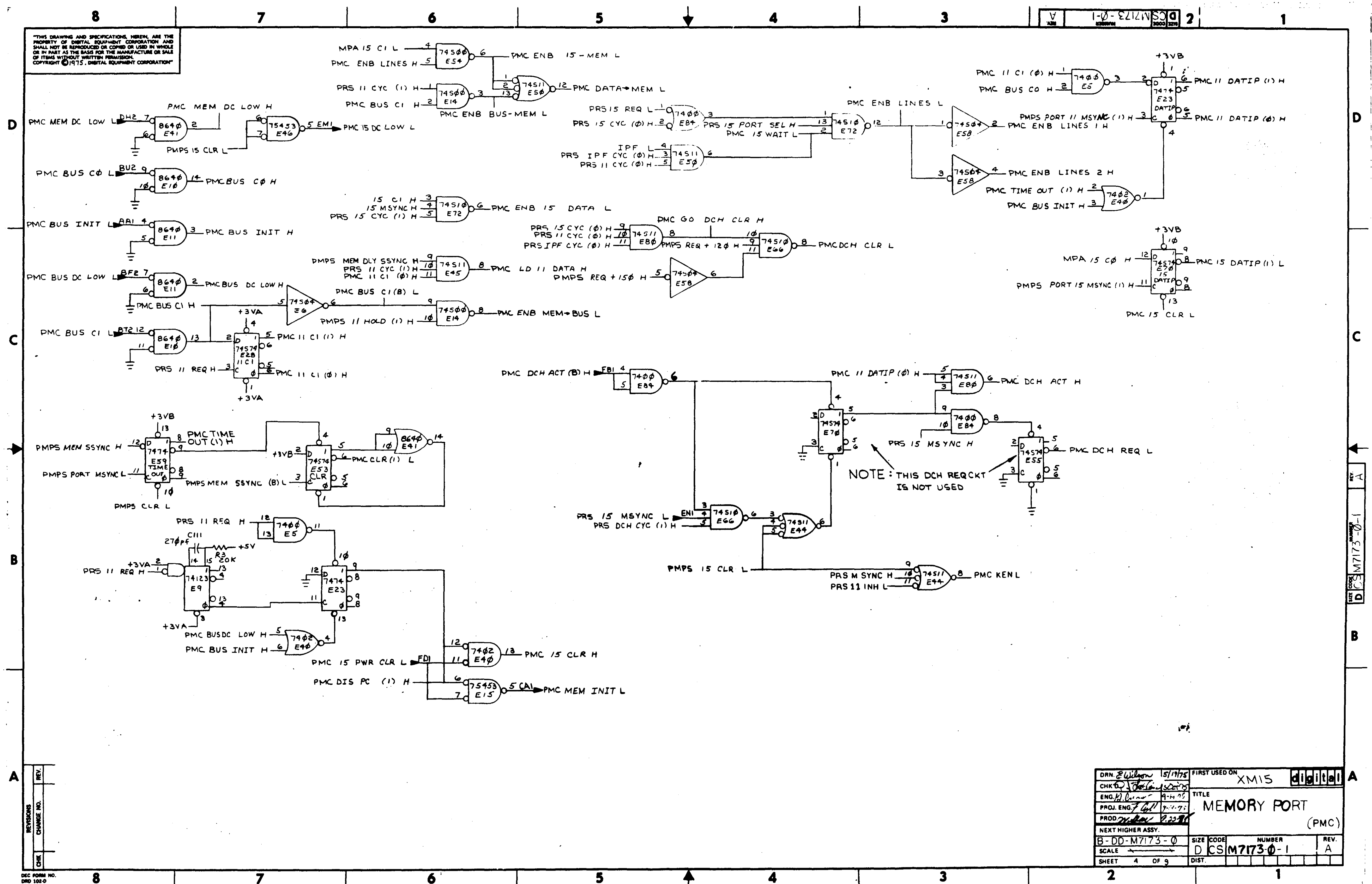
DRN.	5/20/75
FIRST USED ON	XM15
TITLE	MEMORY PORT (PRS)
NEXT HIGHER ASSY.	B-DD-M7173-Ø
SIZE	D
CODE	CS
NUMBER	M7173-Ø-1
REV.	A
SHEET	1 OF 9

digital


PRS PORT REQ H
PMPS CYC STB H
PMPS REQ STB H
PMPS REQ + 200 H
PMPS REQ + 120 H
PMPS REQ + 150 H
PRS 15 CYC (0) H
PRS IFF CYC (0) H
PMPS MEM DLY SSYNC H
PMPS PORT MSYNC L
PMPS MEM MSYNC L
PMPS DIS REQ (0) H
PMPS DIS REQ (B) H
PMC CLR (1) L
PMC DCH CLR L
PMPS CLR L
PMC 15 CLR H
PMC MEM DC LOW H
PMPS 15 CLR L
PMPS PORT 15 MSYNC (1) L
PMPS PORT 15 MSYNC (1) L
PRS MSYNC H
PMPS REQ + 100 H
PMC 11 DATIP (1) H
PRS 11 CYC (1) H
PMPS PORT 11 MSYNC (1) H
PMPS SET MSYNC H
PMPS PORT 11 MSYNC (0) H
PRS BUS MSYNC H
PMPS CLR 11 MSYNC L
PRS IPF CYC (1) H
PMPS PORT IPF MSYNC (1) H
PMPS PORT IPF MSYNC (1) L
PMPS SET MSYNC H
PRS IPF REQ H
PRS 15 CYC (1) H
MPA 15 C1 L
PMPS 15 DLY SSYNC L
MPA 15 C1 H
PMPS MEM DLY SSYNC H
PMPS PORT IPF MSYNC (1) H
PMPS MEM SSYNC H
PRS IPF CYC (1) H
PMPS IPF DLY SSYNC L
PMPS MEM SSYNC H
PMPS MEM SSYNC (B) L
PMPS MEM SSYNC L
PMC 11 C1 (1) H
PRS 11 CYC (1) H
PMC 11 C1 (0) H
PMPS CLR 11 MSYNC L
PMPS 11 HOLD (1) H
PMPS BUS SSYNC L
PRS BUS MSYNC H
PMPS CLR 11 MSYNC H

DRN.		5/21/73	FIRST USED ON XM15
CHK'D			digital
ENG.			TITLE MEMORY PORT (PMPS)
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY. B-DD-M7173-0			SIZE D CODE CS NUMBER M71730-1 REV. A
SCALE			
SHEET 3 OF 9			DIST.

DEC FORM NO. DRD 102-0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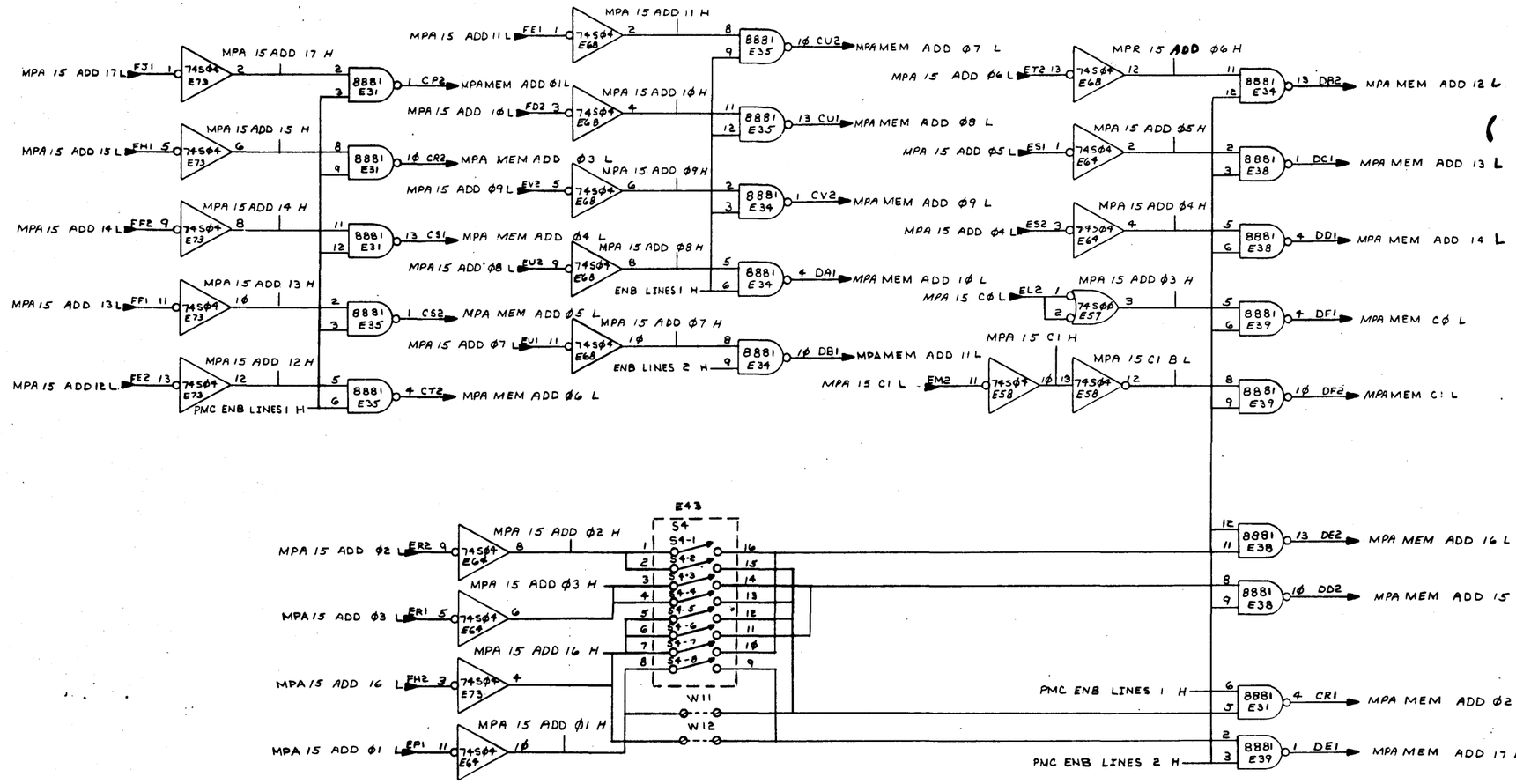
MPA 15 C1 L
PMC ENB LINES H
PMC ENB 15-MEM L
PRS 11 CYC (1) H
PMC BUS C1 H
PMC DATA→MEM L
PMC ENB BUS-MEM L
PMC MEM DC LOW H
PMC MEM DC LOW L
PMC 15 DC LOW L
PMPS 15 CLR L
PMC BUS CØ L
PMC BUS CØ H
PMC BUS INIT L
PMC BUS INIT H
PMC BUS DC LOW L
PMC BUS DC LOW H
PMC BUS C1 H
PMC BUS C1 L
PMC BUS C1 (B) L
PRS 11 REQ H
PMC 11 C1 (1) H
PMC 11 C1 (Ø) H
PMPS 11 HOLD (1) H
PMC ENB MEM→BUS L
15 C1 H
15 MSYNC H
PRS 15 CYC (1) H
PMC ENB 15 DATA L
PMPS MEM DLY SSYNC H
PRS 11 CYC (1) H
PMC 11 C1 (Ø) H
PMC LD 11 DATA H
PRS 15 REQ L
PRS 15 CYC (Ø) H
PRS 15 PORT SEL H
PMC 15 WAIT L
IPF L
PRS IPF CYC (Ø) H
PRS 11 CYC (Ø) H
PMC ENB LINES L
PMC ENB LINES 1 H
PMC ENB LINES 2 H
PMC TIME OUT (1) H
PMC BUS INIT H
PMC 11 C1 (Ø) H
PMC BUS CO H
PMPS PORT 11 MSYNC (1) H
PMC 11 DATIP (1) H
PMC 11 DATIP (Ø) H
PMC GO DCH CLR H
PRS 15 CYC (Ø) H
PRS 11 CYC (Ø) H
PRS IPF CYC (Ø) H
PMPS REQ + 12Ø H
PMPS REQ + 15Ø H
PMC DCH CLR L
MPA 15 CØ H
PMPS PORT 15 MSYNC (1) H
PMC 15 DATIP (1) L
PMC 15 CLR L
PMC DCH ACT (B) H
PMC 11 DATIP (Ø) H
PMC DCH ACT H
PRS 15 MSYNC H
PMC DCH REQ L
NOTE: THIS DCH REQCKT IS NOT USED
PRS 15 MSYNC L
PRS DCH CYC (1) H
PMPS 15 CLR L
PRS M SYNC H
PRS 11 INH L
PMC KEN L
PMPS MEM SSYNC H
PMC TIME OUT (1) H
PMPS PORT MSYNC L
PMPS MEM SSYNC (B) L
PMC CLR (1) L
PMPS CLR L
PRS 11 REQ H
27Øpf
R3 2ØK
+5V
PRS 11 REQ H
PMC BUSDC LOW H
PMC BUS INIT H
PMC 15 PWR CLR L
PMC 15 CLR H
PMC DIS PC (1) H
PMC MEM INIT L
DRN. E. Wilson 5/19/75
FIRST USED ON XM15
digital
TITLE MEMORY PORT (PMC)
NEXT HIGHER ASSY. B-DD-M7173-Ø
SIZE D CODE CS NUMBER M7173-Ø-1 REV. A
SHEET 4 OF 9
DEC FORM NO. DRD 102-D

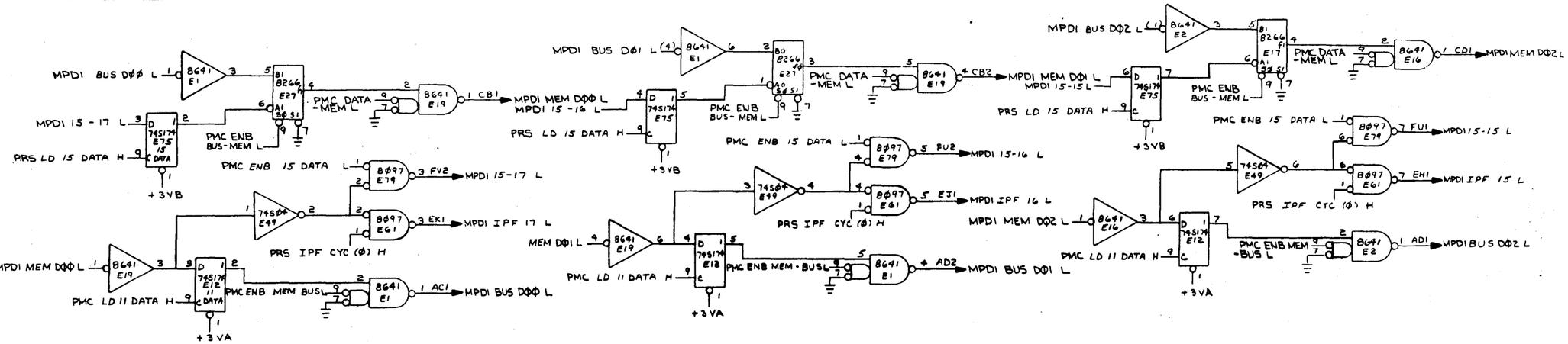


DRN. E Wilson	3/20/75	FIRST USED ON XM15	digital
CHK.		TITLE MEMORY PORT (MPA)	
ENG.			
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY. B-DD-M7173-0		SIZE D CODE CS NUMBER M7173-0-1 REV. A	
SCALE		SHEET 5 OF 9 DIST.	

REVISIONS: REV. | CHANGE NO. | CHK.

DEC FORM NO. DRD 100-0

SIZE CODE DCS M7173-0-1 REV. A



DRN.	5/22/74
CHK'D	5/24/75
ENG.	7-14-75
PROJ. ENG.	7-/-/74
PROD.	8-22-75
NEXT HIGHER ASSY.	B-DD-M7173-Ø
SCALE	
SHEET	6 OF 9

FIRST USED ON XM15 digital

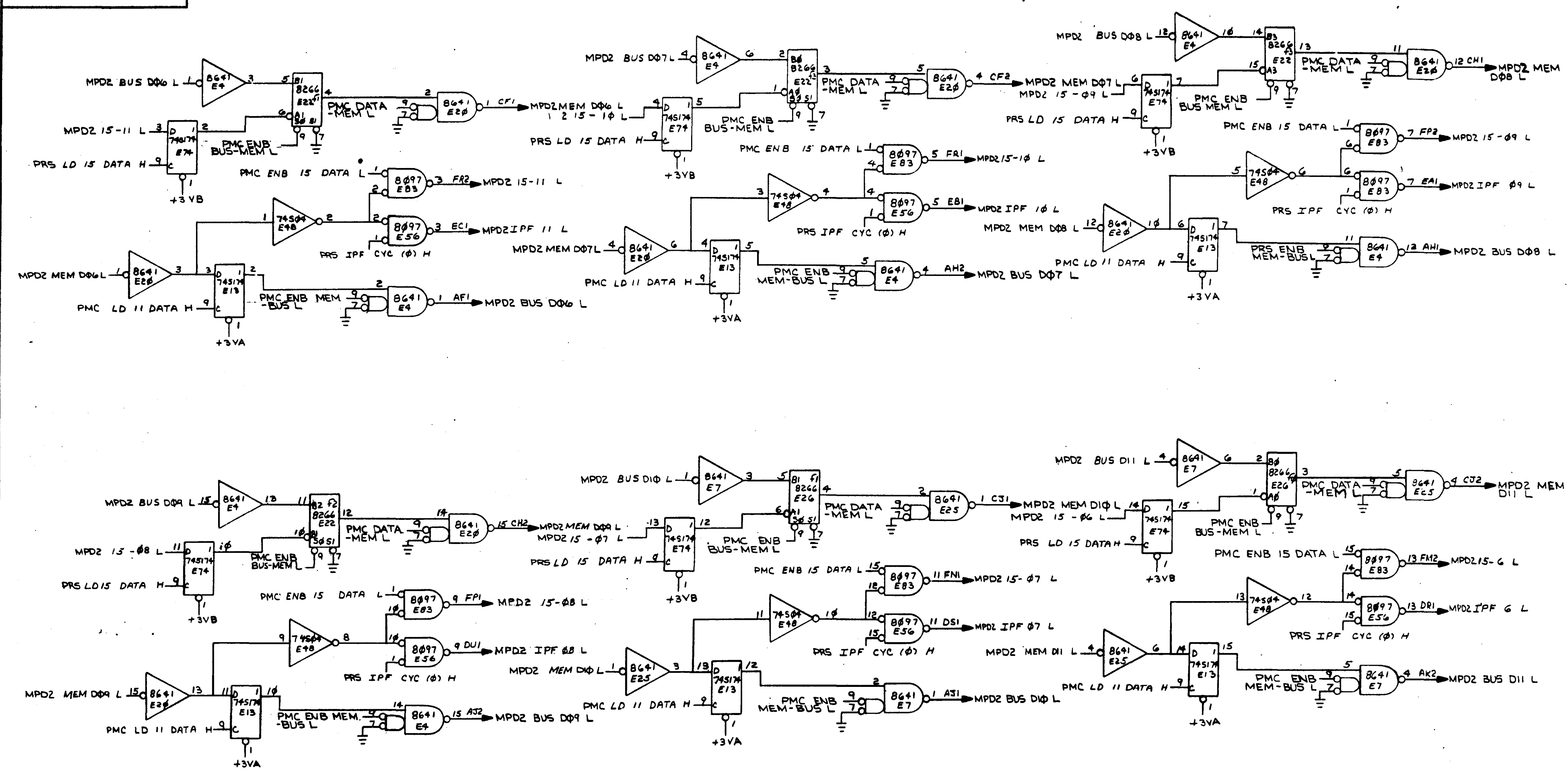
TITLE MEMORY PORT (MPDI)

SIZE D | CODE CS | NUMBER M7173-Ø-1 | REV. A

DIST.

REVISIONS | REV. | CHANGE NO. | CHK.

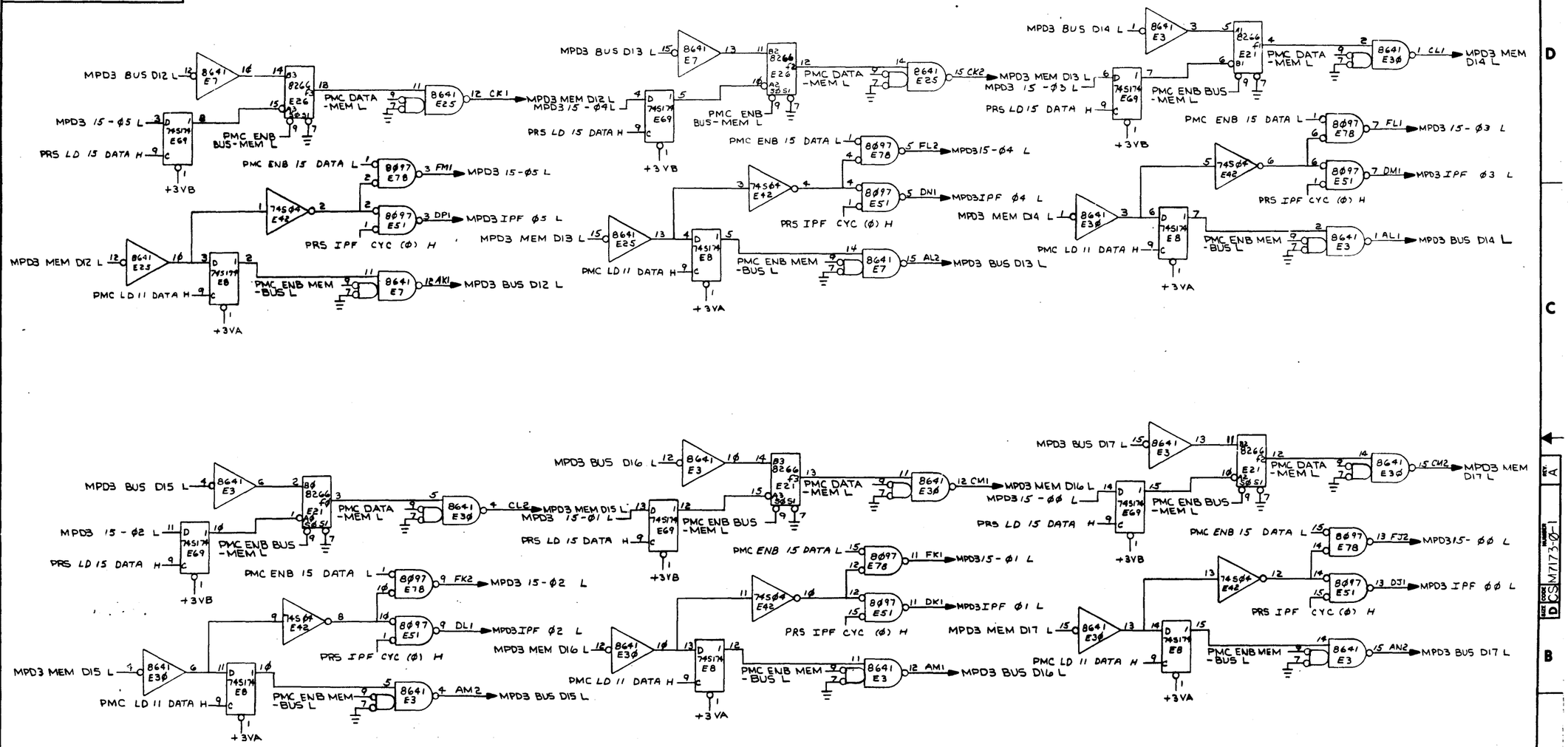
DEC FORM NO. DBD 1060



DRN.	E. Wilson 5/27/75
CHK.	
ENG.	9-19-75
PROJ. ENG.	9-19-75
PROD.	
FIRST USED ON	XM15
TITLE	MEMORY PORT (MPD2)
NEXT HIGHER ASSY.	B-DD-M7173-Ø-
SIZE	D
CODE	CS
NUMBER	M7173-Ø-1
REV.	A
SHEET	7 OF 9

digital

D CS M7173-Ø-1 A



DRN.	E. Wilson 5/27/75
CHK.	
ENG.	9-19-75
PROJ. ENG.	9/19/75
PROD.	9-22-75
NEXT HIGHER ASSY.	B-DD-M7173-Ø
SCALE	
SHEET	8 OF 9

FIRST USED ON: XM15

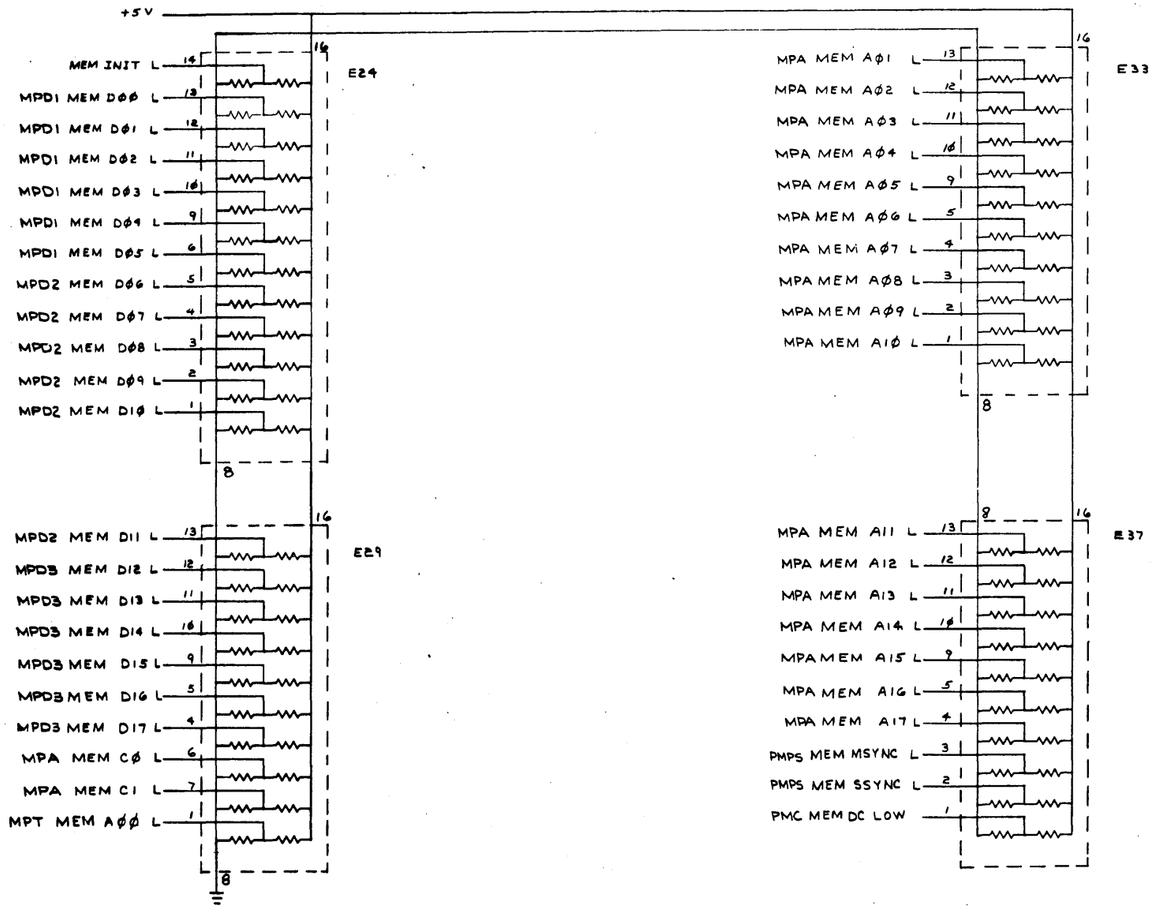
TITLE: MEMORY PORT (MPD3)

SIZE: D | CODE: CS | NUMBER: M7173-Ø-1 | REV: A

DIST.

REVISIONS: REV. | CHANGE NO. | CHK

DEC FORM NO. DRD 102-0



DRN. E. Wilson	5/21/75	FIRST USED ON XM15
CHK. [illegible]	5 Oct 75	digital
ENG. [illegible]	9-19-75	TITLE MEMORY PORT (MPT)
PROJ. ENG. [illegible]	9-22-75	
PROD. [illegible]	9-22-75	
NEXT HIGHER ASSY. B-DD-M7173-0-		SIZE D CODE CS NUMBER M7173-0-1 REV. A
SCALE		
SHEET 9 OF 9		DIST.

REVISIONS | REV. | CHANGE NO. | CHK.

DEC FORM NO. DRD 109-0

BASIC CODE D CS M7173-0-1 REV. A

NOTES:

1. FOR DRAWING DIRECTORY, REFER TO: B-DD-M7174-Ø
2. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	VCC	GND
14 PIN DIP	14	7
16 PIN DIP	16	8
I.C. DEC 7483A	5	12
I.C. DEC 8640	8	1

REWORK INSTRUCTIONS

ETCH CUTS SIDE 1 (AS SHOWN)

1. CUT ETCH AT E26(13)

ETCH CUTS SIDE 2 (AS SHOWN)

1. CUT ETCH AT PTH NEAR E14(6)

WIRE ADDS SIDE 1 (AS SHOWN)

1. ADD WIRE FROM E12(13) TO PTH NEAR E20(9)
2. ADD WIRE FROM E12(3) TO PTH NEAR E26(7)
3. ADD WIRE FROM DL2(13) TO E14(11)
4. ADD WIRE FROM E14(1Ø) TO E14(13)
5. ADD WIRE FROM E14(12) TO E26(13)

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCH CIRCUIT BOARD	5011738	1
101	C1 THRU C99,C109,C110	CAP. .01uf 20% 100V	1001610-01	2
6	C100 THRU C105	CAP. 6.8uf 10% 35V	1005306	3
1	C106	CAP. 120pf 5% 100V	1000018	4
1	C107	CAP. 150pf 5% 100V	1000019	5
1	C108	CAP. 100pf 5% 100V	1000016	6
5	R2,R5,R17,R24,R29	RES. 220 5% ¼W	1300271	7
10	R3,R4,R18 THRU R22,R25, R26,R28	RES. 4.7K 5% ¼W	1300447	8
1	R6	RES. 100 5% ¼W	1300229	9
1	R7	RES. 82 5% ¼W	1301477	10
5	R8,R10,R12,R14,R30	RES. 330 5% ¼W	1300295	11
3	R9,R13,R15	RES. 680 5% ¼W	1301424	12
2	R11,R31	RES. 750 5% ¼W	1301401	13
2	DL1,DL4	DELAY 1Ø-100NS, 9 TAPS	1610033	14
2	DL2,DL3	DELAY 1Ø-125NS, 6 TAPS	1611300	15
5	E1,E7,E8,E95,E101	SW, RKR DIP PKG W/8 SWITCHES	1211164-04	16
3	E2,E82,E83	RES. NETWORK (13-1K) 5%	1300005-01	17
2	E3,E5	I.C. DEC 7483A	1909932-01	18
1	E4 E49 E68	I.C. DEC 7400	1905575	19
10	E6,E66,E71,E72,E89,E90, E96,E97,E102,E103	I.C. DEC 74S85	1912089	20
5	E9,E15,E21,E22,E27	I.C. DEC 8640	1911469	21
5	E10,E14,E81,E87,E88	I.C. DEC 74SØ4	1910534	22
8	E11,E13,E16,E24,E61,E62, E64,E73	I.C. DEC 74S11	1910537	23
9	E12,E20,E26,E31,E37,E43, E44,E55,E74	I.C. DEC 74S74	1910544	24
1	E17	I.C. DEC 7414	1911324	25
5	E18,E25,E50,E58,E78	I.C. DEC 74SØØ	1910532	26
1	E19	I.C. DEC 74193	1910018	27
1	E23	I.C. DEC 7413	1909989	28
10	E28,E33,E34,E39,E40,E45, E46,E51,E52,E57	I.C. DEC 8881	1909705	29
10	E29,E30,E35,E36,E41,E42, E47,E48,E53,E54	I.C. DEC 74S157	1910549	30
1	E32	I.C. DEC 74H3Ø	1909059	31
1	E38	I.C. DEC 74123	1910436	32
3	E94,E99,E1ØØ	I.C. DEC 8C97	1911527	33
1	E56	I.C. DEC 7474	1905547	34
6	E59,E60,E65,E92,E98,E104	I.C. DEC 74161	1910650	35
5	E63,E69,E70,E75,E76	I.C. DEC 74170	1910738	36
1	E67	I.C. DEC 74S1Ø	1910536	37
3	E77,E79,E93	I.C. DEC 7404	1909686	38
2	E80,E91	I.C. DEC 74S22	1910540	39
1	E84	I.C. DEC 74S174	1910550	40
1	E85	I.C. DEC 74H22	1910055	41
1	E86	I.C. DEC 74H52	1909061	42
1		HANDLE ASSY	1210711-02	43
17	W1 THRU W17	JUMPER, WHT INSULATED	9009185	44
12		EYELET, HANDLE	9006732	45

FIRST USED ON OPT/MOD: XM15

ETCH BOARD REV: C

SEMICONDUCTOR CONVERSION CHART

DEC NO.	EIA NO.	DEC NO.	EIA NO.

REVISIONS

REV	CHANGE NO.	CHK
E	M7174-00004	F. DOLL

DRN. R W Caunter — DATE 26 MAY 76
CHK'D — DATE
ENG. — DATE 2 Jun 76
PROJ. ENG. — DATE
PROD. F. Whalen — DATE

NEXT HIGHER ASSY: B-DD-M7174-Ø

SCALE: NONE

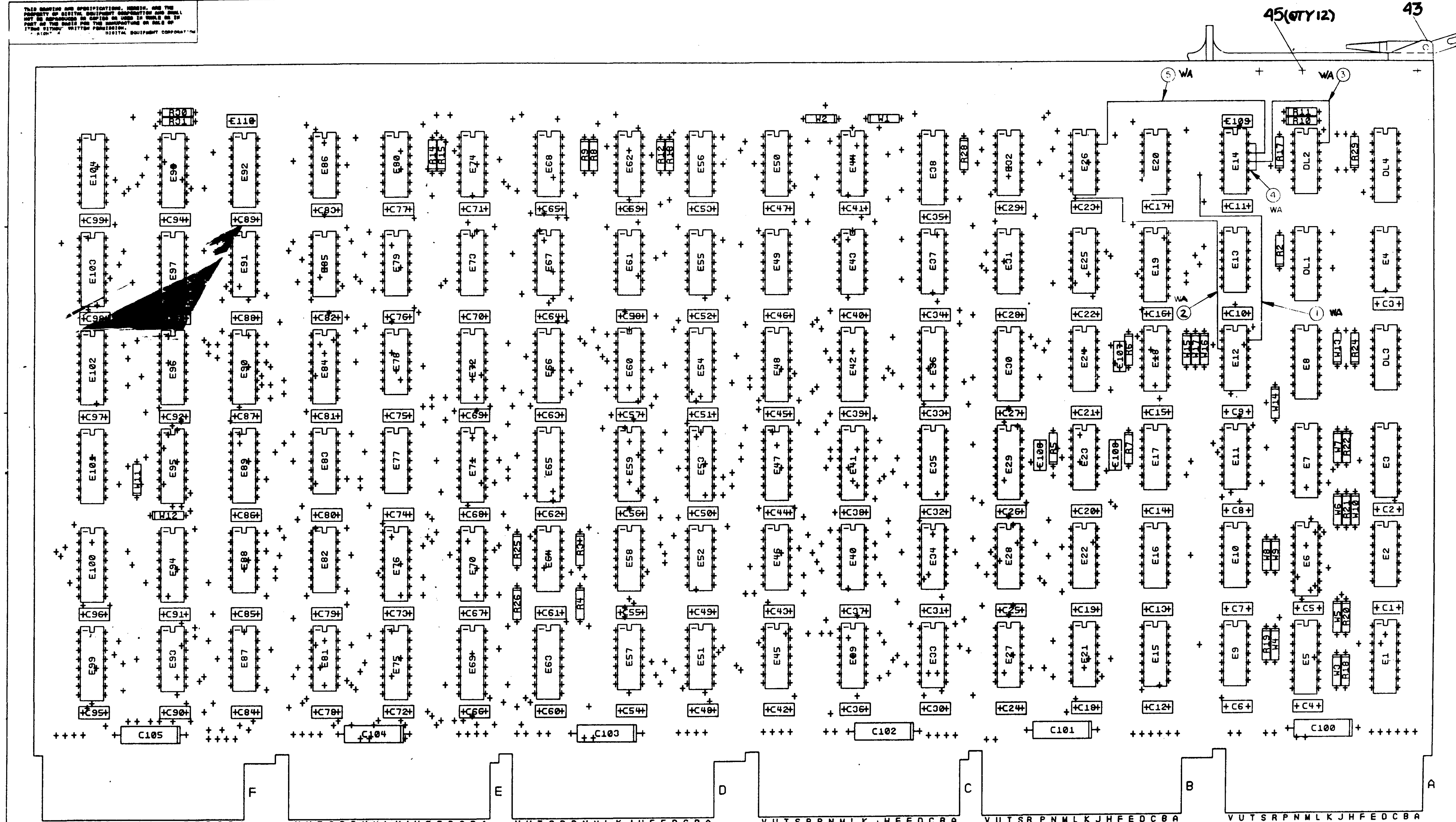
SHEET 1 OF 5

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

TITLE: IPF

SIZE: D CODE: UA NUMBER: M7174-Ø-Ø REV.: E

DIST.



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ. ENG.	
PROD.	

digital

TITLE IPF

SCALE 2/1

SHT. 2 OF 5

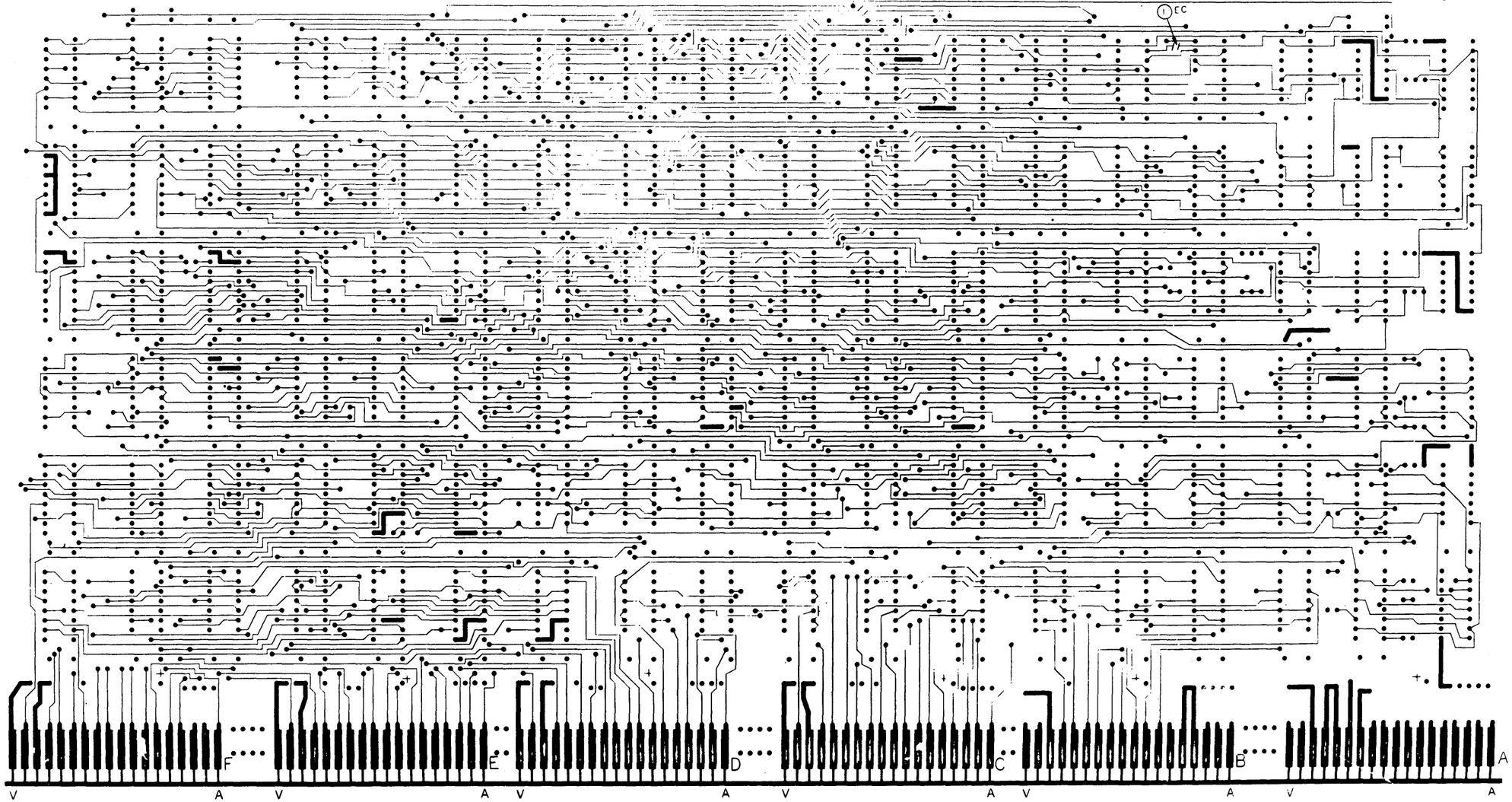
NEXT HIGHER ASSY. B-DD-M7174-0

SIZE D | CODE UA | NUMBER M7174-0-0 | REV E

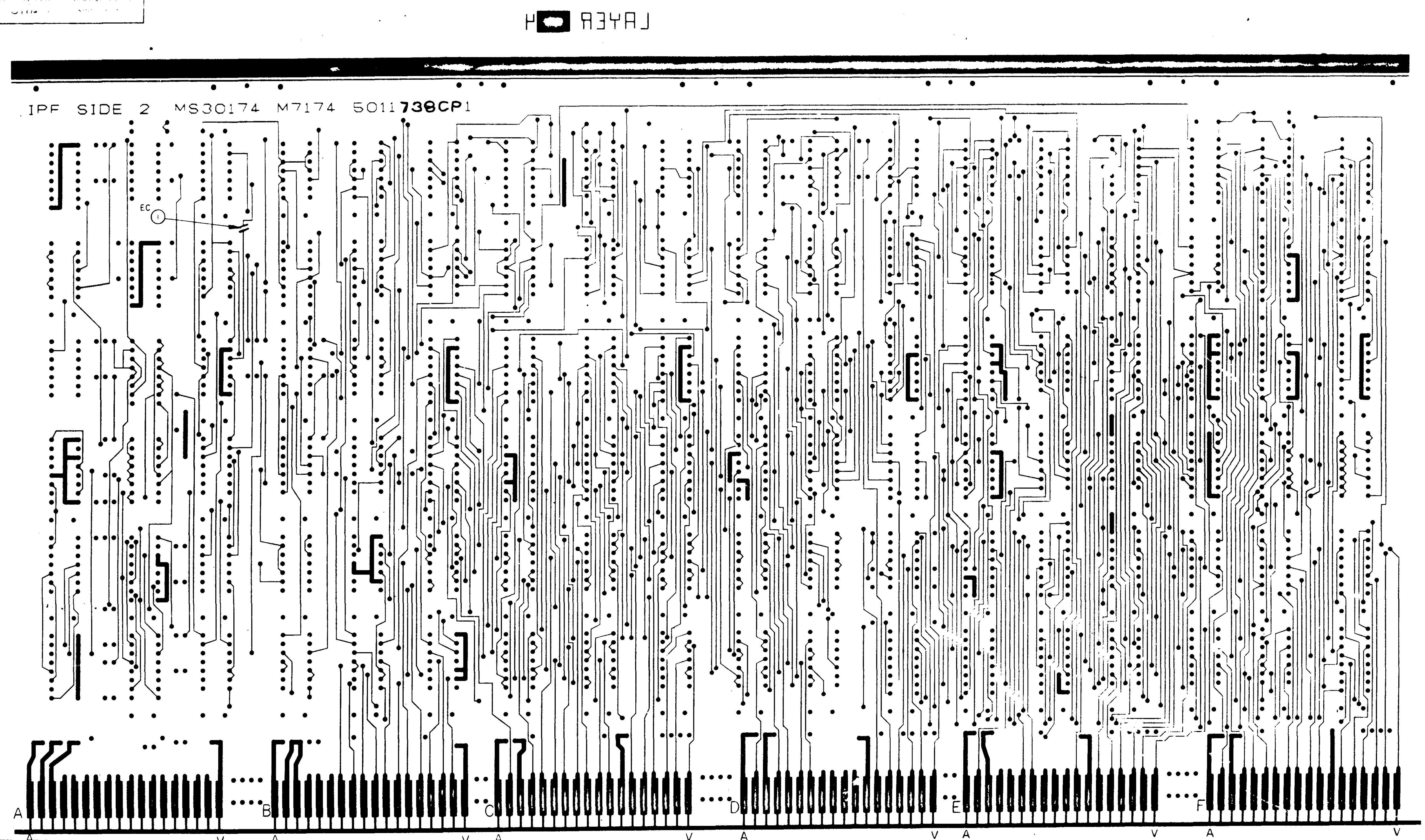
MS#30340

LAYER 1

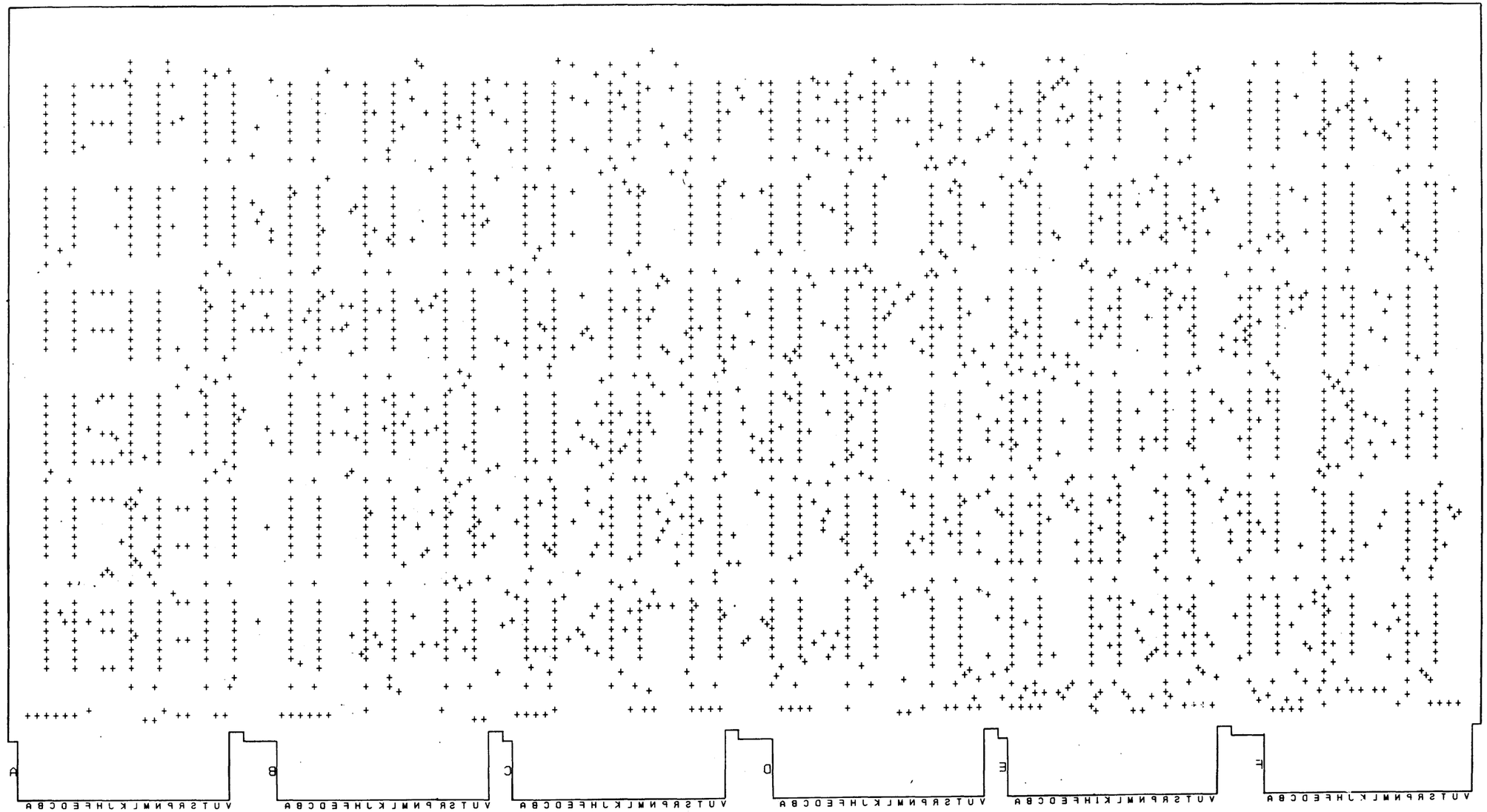
MS30174 M7174 5011738CP1



TITLE	SIZE	CODE	NUMBER	REV
IPF	D	UA	M7174-∅-∅	E
SCALE 2/1 SHEET 3 OF 5	DIST			



TITLE	SIZE	CODE	NUMBER	REV
IPF	D	UA	M7174-Ø-Ø	E
SCALE 2/1 SHEET 4 OF 5				



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
I PF	D	UA	M7174-Ø-Ø	E
SCALE 2/1	SHEET 5 OF 5	DIST		

PAGE REVISION CONTROL SHEET

SH NO.	PAGE REVISIONS	REMARKS
1	C D E	
2	B C D D	(IPC1)
3	B C D D	(IPC2)
4	B C C C	(IPPC)
5	B C C C	(IPCM)
6	B C C C	(IPEP)
7	B C C C	(IPAM)
8	B C C C	(IPFD)

ECO NO.	ETCH REV.	ENG.	DATE
00001	B	-	-
00002	B	F. DOLL	23MAR76
00003	B	E.D.	22 JUNE 76
00004	C	F. DOLL	

FIRST USED ON OPTION/MODEL

XM15

DRN. D. Olson	DATE 5/20/75	digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS
CHK'D. P.J. LeBlanc	DATE 30ct75	
ENG. G. Creaser	DATE 9/11/75	TITLE IPF
PROJ. ENG. F. Doll	DATE 9/11/75	
PROD. W. Sloan	DATE 9/22/75	

NEXT HIGHER ASSY.

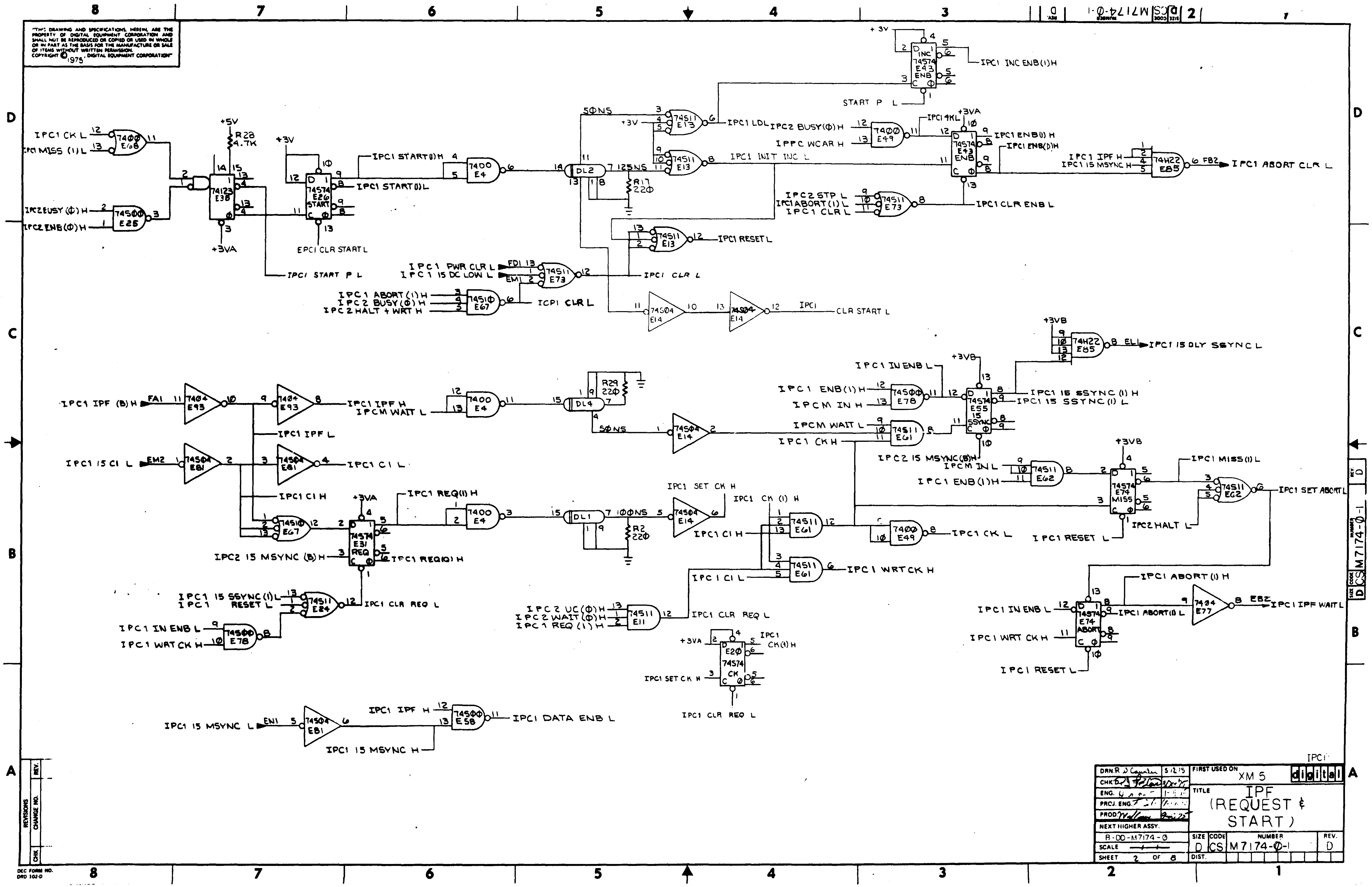
B-DD-M7174-0

SCALE

SHEET 1 OF 8

SIZE	CODE	NUMBER	REV
B	CS	M7174-0-1	E

DIST.



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COPYRIGHT © 1975, DIGITAL EQUIPMENT CORPORATION"
IPC1 CK L
IPC1 MISS (1) L
IPC2 BUSY (Φ) H
IPC2 ENB (Φ) H
74123 E38
R28 4.7K
+5V
+3V
+3VA
74574 E26 START
IPC1 START (1) H
IPC1 START (0) L
EPC1 CLR START L
IPC1 START P L
7400 E4
DL2
125NS
R17 22Φ
5ΦNS
74S11 E13
IPC1 LDL
IPC1 INIT INC L
IPC1 RESET L
74574 E43 INC
IPC1 INC ENB (1) H
START P L
IPC2 BUSY (Φ) H
IPPC WCAR H
7400 E49
IPC1 4KL
74574 E43 ENB
IPC1 ENB (1) H
IPC1 ENB (Φ) H
IPC1 IPF H
IPC1 15 MSYNC H
74H22 E85
FB2
IPC1 ABORT CLR L
IPC2 STP L
IPC1 ABORT (1) L
IPC1 CLR L
74S11 E73
IPC1 CLR ENB L
IPC1 PWR CLR L
IPC1 15 DC LOW L
IPC1 CLR L
IPC1 ABORT (1) H
IPC2 BUSY (Φ) H
IPC2 HALT + WRT H
74S1Φ E67
ICP1 CLR L
74S04 E14
IPC1 CLR START L
IPC1 IPF (B) H
FA1
7404 E93
IPC1 IPF H
IPCM WAIT L
IPC1 IPF L
DL4
R29 22Φ
IPC1 15 CI L
EM2
74S04 E81
IPC1 CI L
IPC1 CI H
74S1Φ E67
74574 E31 REQ
IPC1 REQ (1) H
IPC2 15 MSYNC (B) H
IPC1 REQ (0) H
DL1
1ΦΦNS
R2 22Φ
IPC1 15 SSYNC (1) L
IPC1 RESET L
74S11 E24
IPC1 CLR REQ L
IPC1 IN ENB L
IPC1 WRT CK H
74S00 E78
IPC1 SET CK H
IPC1 CK (1) H
74S11 E61
IPC1 CI H
IPC1 WRT CK H
IPC1 CI L
IPC2 UC (Φ) H
IPC2 WAIT (Φ) H
IPC1 REQ (1) H
74S11 E11
IPC1 CLR REQ L
E2Φ 74574 CK
IPC1 SET CK H
IPC1 CLR REQ L
+3VB
74H22 E85
ELL
IPC1 15 DLY SSYNC L
IPC1 IN ENB L
IPC1 ENB (1) H
IPCM IN H
74S00 E78
74574 E55 15 SSYNC
IPC1 15 SSYNC (1) H
IPC1 15 SSYNC (1) L
IPCM WAIT L
IPC1 CK H
74S11 E61
IPC2 15 MSYNC (B) H
IPCM IN L
IPC1 ENB (1) H
74S11 E62
74574 E74 MISS
IPC1 MISS (1) L
74S11 E62
IPC1 SET ABORT L
IPC2 HALT L
IPC1 RESET L
7400 E49
IPC1 CK L
IPC1 ABORT (1) H
IPC1 IN ENB L
74574 E74 ABORT
IPC1 ABORT (1) L
7404 E77
EBZ
IPC1 IPF WAIT L
IPC1 WRT CK H
IPC1 RESET L
IPC1 15 MSYNC L
EN1
74S04 E81
IPC1 IPF H
74S00 E58
IPC1 DATA ENB L
IPC1 15 MSYNC H
REVISIONS
REV.
CHANGE NO.
CHK
DEC FORM NO. DRD 102-D
IPC1
DRN R. D. Carpenter 5.12.75
CHKD
ENG.
PROJ. ENG.
PROD
FIRST USED ON XM 5
digital
TITLE IPF (REQUEST & START)
NEXT HIGHER ASSY. B-DD-M7174-0
SIZE D
CODE CS
NUMBER M7174-Φ-1
REV. D
SCALE
SHEET 2 OF 8
DIST.

IPC2

KM15

TITLE IPF (CONTROL 2)

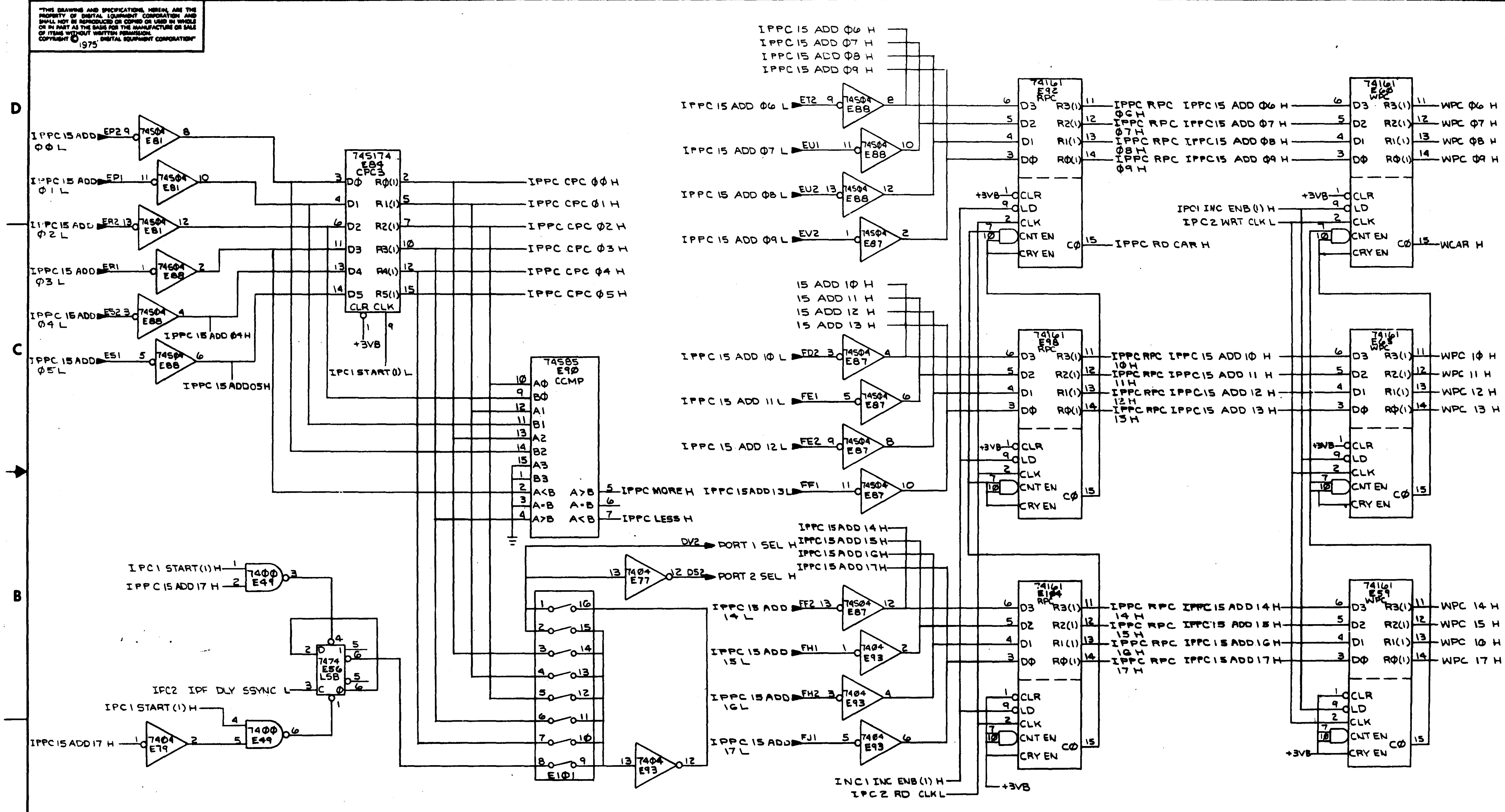
NEXT HIGHER ASSY.

SIZE D CODE CS NUMBER M7174-0-1 REV. D

SCALE

SHEET 1 OF 8

DIST.



IPPC 15 ADD Φ0 L
IPPC 15 ADD Φ1 L
IPPC 15 ADD Φ2 L
IPPC 15 ADD Φ3 L
IPPC 15 ADD Φ4 L
IPPC 15 ADD Φ5 L
74S174 E84 CPC3
IPPC CPC Φ0 H
IPPC CPC Φ1 H
IPPC CPC Φ2 H
IPPC CPC Φ3 H
IPPC CPC Φ4 H
IPPC CPC Φ5 H
IPC1 START (1) L
74S85 E90 CCMP
IPPC MORE H
IPPC LESS H
IPC1 START (1) H
IPPC 15 ADD 17 H
IPC2 IPF DLY SSYNC L
7474 E56 LSB
PORT 1 SEL H
PORT 2 SEL H
E101
IPPC 15 ADD Φ6 L
IPPC 15 ADD Φ7 L
IPPC 15 ADD Φ8 L
IPPC 15 ADD Φ9 L
74161 E92 RPC
IPPC RPC IPPC 15 ADD Φ6 H
IPPC RPC IPPC 15 ADD Φ7 H
IPPC RPC IPPC 15 ADD Φ8 H
IPPC RPC IPPC 15 ADD Φ9 H
IPPC RD CAR H
IPC1 INC ENB (1) H
IPC2 WRT CLK L
74161 E68 WPC
WPC Φ6 H
WPC Φ7 H
WPC Φ8 H
WPC Φ9 H
WCAR H
IPPC 15 ADD 10 L
IPPC 15 ADD 11 L
IPPC 15 ADD 12 L
IPPC 15 ADD 13 L
74161 E98 RPC
IPPC RPC IPPC 15 ADD 10 H
IPPC RPC IPPC 15 ADD 11 H
IPPC RPC IPPC 15 ADD 12 H
IPPC RPC IPPC 15 ADD 13 H
74161 E63 WPC
WPC 10 H
WPC 11 H
WPC 12 H
WPC 13 H
IPPC 15 ADD 14 L
IPPC 15 ADD 15 L
IPPC 15 ADD 16 L
IPPC 15 ADD 17 L
74161 E104 RPC
IPPC RPC IPPC 15 ADD 14 H
IPPC RPC IPPC 15 ADD 15 H
IPPC RPC IPPC 15 ADD 16 H
IPPC RPC IPPC 15 ADD 17 H
INC1 INC ENB (1) H
IPC2 RD CLK L
74161 E59 WPC
WPC 14 H
WPC 15 H
WPC 16 H
WPC 17 H

(IPPC)

DRN.	R.W. Counter 5-15-75
CHK'D	5-20-75
ENG.	9-19-75
PROJ. ENG.	9-19-75
PROD.	
FIRST USED ON	XM15
TITLE	IPF PROGRAM COUNTERS
NEXT HIGHER ASSY.	B-DD-M7174-0
SIZE	D
CODE	CS
NUMBER	M7174-01
REV.	C
SCALE	
SHEET	4 OF 8

digital

DEC FORM NO. DRD 102-0

74S85 E97 RCMP
IPPC RPC Φ7 H
IPPC 15 ADD Φ7 H
IPPC RPC Φ6 H
IPPC 15 ADD Φ6 H
IPPC CPC Φ5 H
IPPC 15 ADD Φ5 H
IPPC CPC Φ4 H
IPPC 15 ADD Φ4 H
IPPC 15 ADD Φ8 H
IPPC RPC Φ8 H
A>B A=B A<B

74S85 E96 RCMP
IPPC RPC 12 H
IPPC 15 ADD 12 H
IPPC RPC 11 H
IPPC 15 ADD 11 H
IPPC RPC 10 H
IPPC 15 ADD 10 H
IPPC RPC Φ9 H
IPPC 15 ADD Φ9 H
IPPC 15 ADD 13 H
IPPC RPC 13 H
A>B A=B A<B

74S85 E102 RCMP
IPPC MORE H
IPPC LESS H
A>B A=B A<B
IPCM BELOW H

74S85 E103 RCMP
IPPC RPC 17 H
IPPC 15 ADD 17 H
IPPC RPC 16 H
IPPC 15 ADD 16 H
IPPC RPC 15 H
IPPC 15 ADD 15 H
IPPC RPC 14 H
IPPC 15 ADD 14 H
+3VB
A>B A=B A<B
IPCM 4 BIT EQ H

74S85 E66 WCMP
IPPC WPC Φ7 H
IPPC 15 ADD Φ7 H
IPPC WPC Φ6 H
IPPC 15 ADD Φ6 H
IPPC CPC Φ5 H
IPPC 15 ADD Φ5 H
IPPC CPC Φ4 H
IPPC 15 ADD Φ4 H
IPPC 15 ADD Φ8 H
IPPC WPC Φ8 H
A>B A=B A<B

74S85 E71 WCMP
IPPC WPC 12 H
IPPC 15 ADD 12 H
IPPC WPC 11 H
IPPC 15 ADD 11 H
IPPC WPC 10 H
IPPC 15 ADD 10 H
IPPC WPC Φ9 H
IPPC 15 ADD Φ9 H
IPPC 15 ADD 13 H
WPC 13 H
A>B A=B A<B

74S85 E89 WCMP
IPPC MORE H
IPPC LESS H
A>B A=B A<B
IPCM EQUAL H
IPC2 BUSY (1) H
IPCM WAIT L

74S85 E72 WCMP
IPPC WPC 17 H
IPPC 15 ADD 17 H
IPPC WPC 10 H
IPPC 15 ADD 10 H
IPPC WPC 15 H
IPPC 15 ADD 15 H
IPPC WPC 14 H
IPPC 15 ADD 14 H
+3VB
A>B A=B A<B

7404 E77
IPCM ABOVE H
IPCM BELOW H
74S00 E78
IPCM INL
7404 E77
IPCM IN H

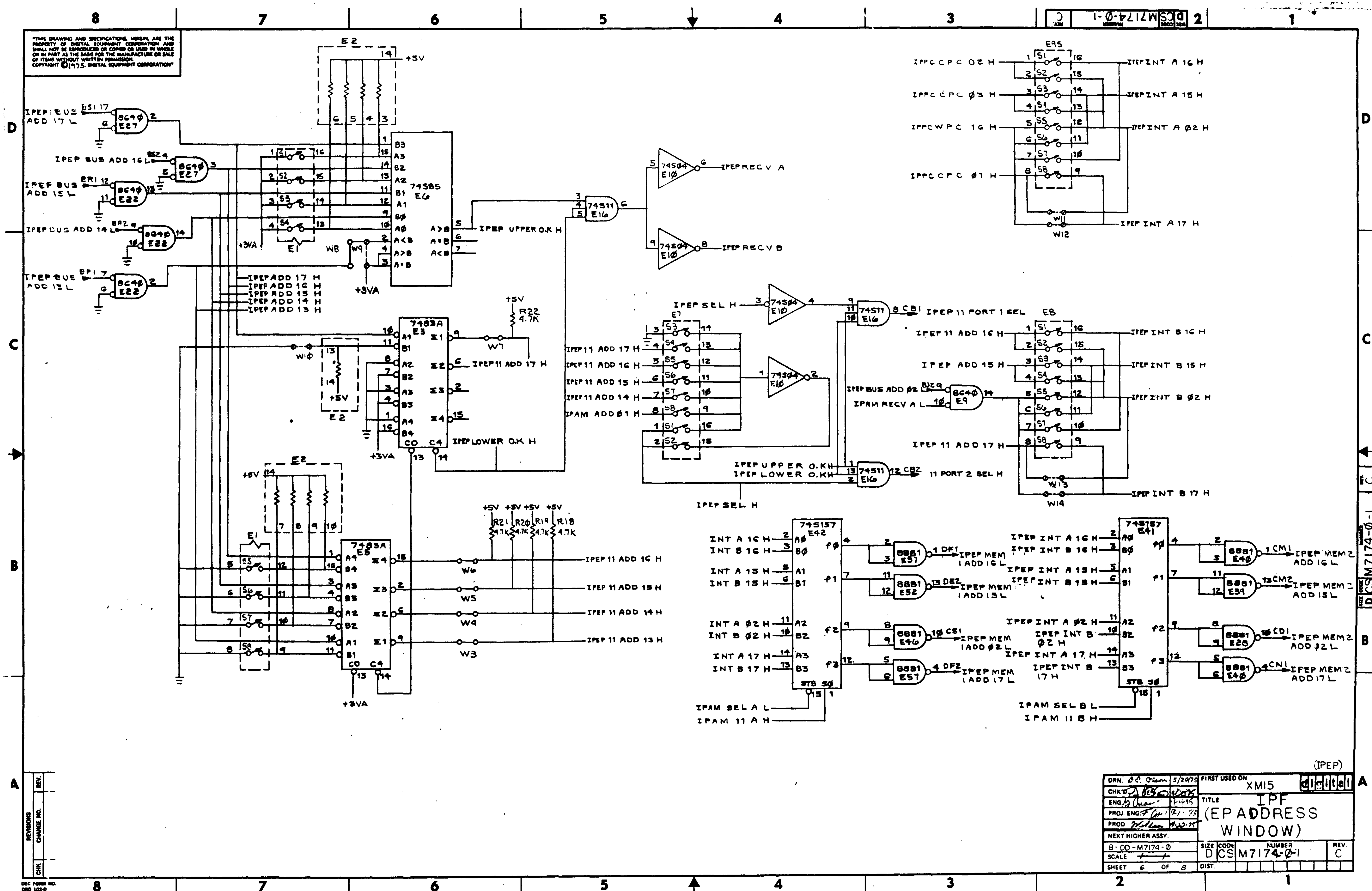
+5V
C1 THRU C99 .01 μf
C100 THRU C105 6.8 μf
R10 330
R30 330
IPCM +3VA
IPCM +3VB
R11 750
R31 750
C110 .01 μf
C119 .01 μf

(IPCM)

DRN. R.W. Cameron	5-16-75	FIRST USED ON	XM15
CHK'D		TITLE	IPF (READ & WRITE COMPARITOR)
ENG. D. Queen	9-19-75		
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY.			
B-CO-M7174-0		SIZE D CODE CS NUMBER M7174-0-1 REV. C	
SCALE			
SHEET 5 OF 8		DIST.	

REVISIONS | REV | CHANGE NO. | CHK

DEC FORM NO. DRD 102-D



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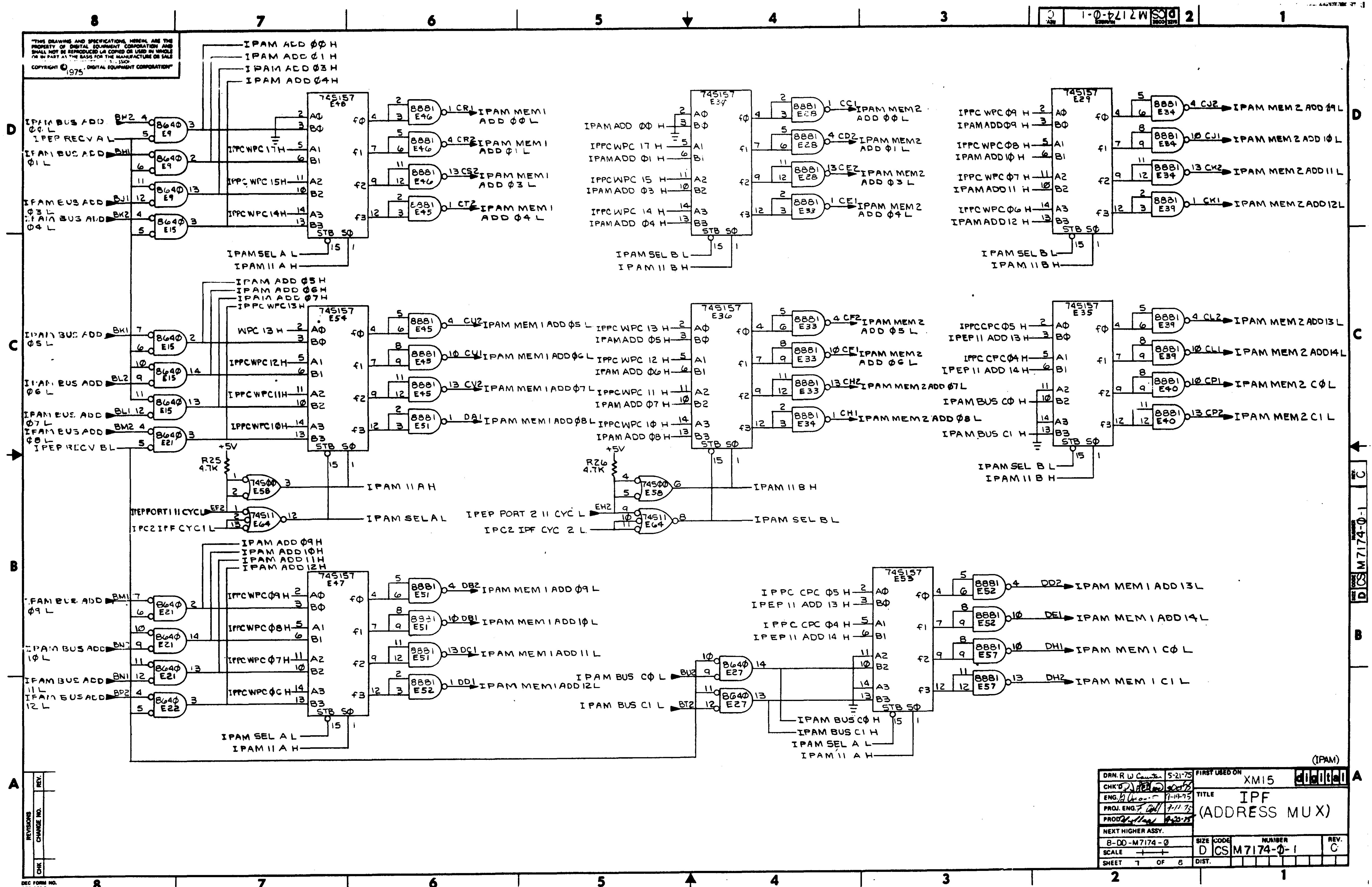
COPYRIGHT © 1975. DIGITAL EQUIPMENT CORPORATION"
IPEP BUS ADD 16 L
IPEP ADD 17 H
IPEP ADD 16 H
IPEP ADD 15 H
IPEP ADD 14 H
IPEP ADD 13 H
IPEP UPPER O.K H
IPEP LOWER O.K H
IPEP RECV A
IPEP RECV B
IPEP SEL H
IPEP 11 PORT 1 SEL
11 PORT 2 SEL H
IPEP 11 ADD 17 H
IPEP 11 ADD 16 H
IPEP 11 ADD 15 H
IPEP 11 ADD 14 H
IPEP 11 ADD 13 H
IPAM ADD Ø1 H
IPAM RECV A L
IPEP INT A 16 H
IPEP INT A 15 H
IPEP INT A Ø2 H
IPEP INT A 17 H
IPEP INT B 16 H
IPEP INT B 15 H
IPEP INT B Ø2 H
IPEP INT B 17 H
IPAM SEL A L
IPAM 11 A H
IPAM SEL B L
IPAM 11 B H
IPEP MEM 1 ADD 16 L
IPEP MEM 1 ADD 15 L
IPEP MEM 1 ADD Ø2 L
IPEP MEM 1 ADD 17 L
IPEP MEM 2 ADD 16 L
IPEP MEM 2 ADD 15 L
IPEP MEM 2 ADD Ø2 L
IPEP MEM 2 ADD 17 L
(IPEP)
DRN. 5/29/75
FIRST USED ON XM15
digital
TITLE IPF (EP ADDRESS WINDOW)
NEXT HIGHER ASSY. B-DD-M7174-Ø
SCALE
SHEET 6 OF 8
SIZE D CODE CS NUMBER M7174-Ø-1 REV. C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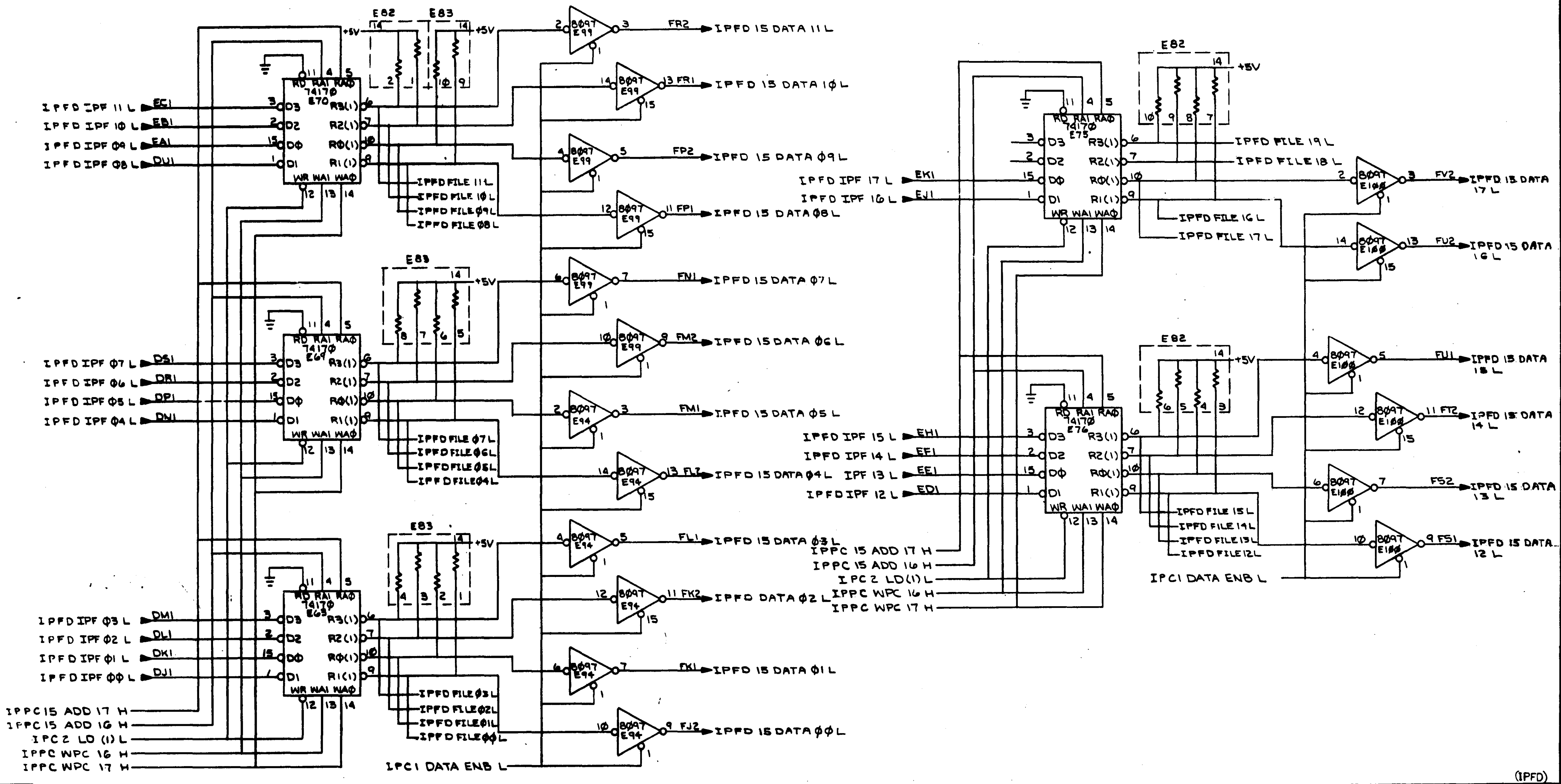
74S157 E48
74S157 E37
74S157 E29
74S157 E54
74S157 E36
74S157 E35
74S157 E47
74S157 E53
IPAM SEL A L
IPAM 11 A H
IPAM SEL B L
IPAM 11 B H
IPEP PORT 2 11 CYC L
IPC2 IPF CYC 2 L
IPAM BUS C0 L
IPAM BUS C1 L
IPAM MEM 1 ADD 00 L
IPAM MEM 2 ADD 00 L
IPAM MEM 2 C0 L
IPAM MEM 2 C1 L
IPAM MEM 1 C0 L
IPAM MEM 1 C1 L
(IPAM)
DRN. R W Caunter 5-21-75
FIRST USED ON XM15
digital
TITLE IPF (ADDRESS MUX)
NEXT HIGHER ASSY. 8-DD-M7174-0
SIZE D CODE CS NUMBER M7174-0-1 REV. C
SHEET 7 OF 8
DEC FORM NO. DRD 102-D



IPFD IPF 11 L
IPFD IPF 10 L
IPFD IPF Ø9 L
IPFD IPF Ø8 L
74170 E70
E82
E83
+5V
IPFD FILE 11 L
IPFD FILE 10 L
IPFD FILE Ø9 L
IPFD FILE Ø8 L
8097 E99
IPFD 15 DATA 11 L
IPFD 15 DATA 10 L
IPFD 15 DATA Ø9 L
IPFD 15 DATA Ø8 L
IPFD IPF Ø7 L
IPFD IPF Ø6 L
IPFD IPF Ø5 L
IPFD IPF Ø4 L
74170 E69
IPFD FILE Ø7 L
IPFD FILE Ø6 L
IPFD FILE Ø5 L
IPFD FILE Ø4 L
IPFD 15 DATA Ø7 L
IPFD 15 DATA Ø6 L
IPFD 15 DATA Ø5 L
IPFD 15 DATA Ø4 L
8097 E94
IPFD IPF Ø3 L
IPFD IPF Ø2 L
IPFD IPF Ø1 L
IPFD IPF ØØ L
74170 E63
IPFD FILE Ø3 L
IPFD FILE Ø2 L
IPFD FILE Ø1 L
IPFD FILE ØØ L
IPFD 15 DATA Ø3 L
IPFD DATA Ø2 L
IPFD 15 DATA Ø1 L
IPFD 15 DATA ØØ L
IPPC 15 ADD 17 H
IPPC 15 ADD 16 H
IPC2 LD (1) L
IPPC WPC 16 H
IPPC WPC 17 H
IPC1 DATA ENB L
IPFD IPF 17 L
IPFD IPF 16 L
74170 E75
IPFD FILE 19 L
IPFD FILE 18 L
IPFD FILE 16 L
IPFD FILE 17 L
8097 E100
IPFD 15 DATA 17 L
IPFD 15 DATA 16 L
IPFD IPF 15 L
IPFD IPF 14 L
IPF 13 L
IPFD IPF 12 L
74170 E76
IPFD FILE 15 L
IPFD FILE 14 L
IPFD FILE 13 L
IPFD FILE 12 L
IPFD 15 DATA 15 L
IPFD 15 DATA 14 L
IPFD 15 DATA 13 L
IPFD 15 DATA 12 L

(IPFD)

DRN. R.W. Counter 5-19-75	FIRST USED ON XM15
CHK.	TITLE IPF (FILE DATA)
ENG. 9-19-75	
PROJ. ENG. 9-17-75	
PROD.	
NEXT HIGHER ASSY. B-DD-M7174-Ø	SIZE D CODE CS NUMBER M7174-Ø-1 REV. C
SCALE	
SHEET 8 OF 8	DIST.

digital

DEC FORM NO. DRD 102-0

NOTES:

1. FOR DRAWING DIRECTORY, REFER TO: B-DD-M7175-Ø
2. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY.

PACKAGE TYPE	+5V	GND
8640	8	1
75452	8	4
7483A	5	12
16 PIN DIP	16	8
14 PIN DIP	14	7

ETCH CUTS SIDE #1 AS SHOWN:

1. CUT ETCH FROM E31(1) TO E38(2) NEAR E32(1,2)
2-3. CUT ETCH FROM E31(7) TO P.T.H. NEAR E56(8,9)
4. CUT ETCH FROM DL1(11) TO E102(9)
5. CUT ETCH FROM E45(13) TO P.T.H. NEAR E39(3)
6. CUT ETCH FROM E55(5) TO P.T.H. NEAR E67(5,6)
7. CUT ETCH FROM E55(5) TO E43(9) NEAR E49(3,4)

ETCH CUTS SIDE #2 AS SHOWN:

1-2. CUT ETCH BOTH SIDES OF DOUBLE P.T.H.'s NEAR E71(9,10)
3. CUT ETCH FROM E72(1) TO P.T.H. NEAR E73(5,6)
4. CUT ETCH FROM E45(13) TO P.T.H. NEAR E47(8)
5. CUT ETCH FROM E74(14) TO P.T.H. NEAR E74(8)
6. CUT ETCH AT E68(1)

WIRE ADDS SIDE #1 AS SHOWN:

1. ADD WIRE FROM E38(2) TO P.T.H. NEAR E56(8,9)
2. ADD WIRE FROM E31(1) TO P.T.H. CONNECTED TO E53(1)
3. ADD WIRE FROM DL1(5) TO E102(9)
4. ADD WIRE FROM E45(13) TO E59(1)
5. ADD WIRE FROM E55(5) TO E66(12)
6. ADD WIRE FROM P.T.H. NEAR E39(3) TO P.T.H. NEAR E47(8).
7. ADD WIRE FROM E43(9) TO P.T.H. NEAR E67(5,6)
8. ADD WIRE FROM E72(1) TO E49(9). NOTE: THE I.C. IS 14 PIN, NOT 16. DISREGARD REMAINING P.T.H.
9. ADD WIRE FROM E49(11) TO P.T.H. NEAR E73(5,6)
10. ADD WIRE FROM E48(10) TO E49(13)
11. ADD WIRE FROM E43(2) TO E49(10) (DO NOT SOLDER)
12. ADD WIRE FROM E49(10) TO E49(12) (SOLDER #11 AND 12)
13. ADD WIRE FROM E78(5) TO E68(11)
14. ADD WIRE FROM E74(13) TO P.T.H. CONNECTED TO EF1
15. ADD WIRE FROM E49(7) TO P.T.H. BELOW E49(7)
16. ADD WIRE FROM E46(2) TO E68(1)

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011760	1
107	C1,C2,C10 THRU C114	CAP. .01mfd 100V 20%	1001610 01	2
1	C3	CAP. 330pf 100V 5%	1000023	3
6	C4 THRU C9	CAP 6 8mfd 35V 10%	1005306	4
1		HANDLE	1210711	5
1	S1	SW RKR DIP PAK W 8 SWS	1211164-04	6
1		COVER SWITCH	1211284-04	7
2	R1,R3	RES. 330 5% ¼W	1300295	8
2	R2,R9	RES 750 5% ¼W	1301401	9
4	R4,R5,R7,R8	RES 220 5% ¼W	1300271	10
7	R6,R10,R11 THRU R15	RES 4 7K 5% ¼W	1300447	11
2	R16,R18	RES. 180 5% ¼W	1301322	12
2	R17,R19	RES. 390 5% ¼W	1300309	13
2	DL1,DL2	DELAY 100NS, 10NS TAP	1610033	14
9	E1,E2,E3,E8,E9,E[illegible],E20, E26,E44	I.C. DEC 8640	1911469	15
7	E4,E12,E36,E65,E91,E98, E104	I.C. DEC 74H30	1909059	16
6	E5,E18,E42,E53,E55,E84	I.C. DEC 74S10	1910536	17
4	E7,E13,E19,E25	I.C. DEC 8097	1911527	18
4	E10,E15,E16,E46	I.C. DEC 7402	1909004	19
11	E11,E23,E60,E67,E69,E74, E80,E86,E89,E92,E102	I.C. DEC 74S04	1910534	20
6	E21,E27,E28,E29,E34,E35	I.C. DEC 74174	1910652	21
4	E22,E17,E97,E103	I.C. DEC 74175	1910651	22
5	E24,E47,E54,E72,E95	I.C. DEC 74S20	1910539	23
3	E30,E64,E78	I.C. DEC 74S00	1910532	24
2	E31,E32	I.C. DEC 75452	1910645-01	25
4	E33,E39,E40,E99	I.C. DEC 74S85	1912089	26
7	E37,E48,E61,E66,E79,E90, E96	I.C. DEC 74S11	1910537	27
1	E38	I.C. DEC 7437	1910091	28
2	E41,E49	I.C. DEC 74S74	1910544	29
4	E43,E73,E85,E101	I.C. DEC 74H74	1909667	30
2	E45,E58	I.C. DEC 7400	1905575	31
5	E50,E56,E57,E62,E68	I.C. DEC 8234	1911315	32
2	E51,E105	I.C. DEC 7410	1905576	33
1	E52	I.C. DEC 7404	1909686	34
2	E59,E100	I.C. DEC 7420	1905577	35
1	E63	I.C. DEC 7401	1905590	36
6	E70,E71,E76,E77,E82,E83	I.C. DEC 7483A	1909932-01	37
5	E75,E81,E87,E88,E93	I.C. DEC 74S153	1910547	38
1	E94	I.C. DEC 74123	1910436	39
1	E106	I.C. DEC 7438	1911219	40
12		EYELET	9006732	41
1	W1	JUMPER, INSULATED	9009185	42

PARTS LIST

FIRST USED ON OPTION MODEL: XM15

ETCH BOARD REV.

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV.	CHANGE NO.	CHK			
B	M7175-00001 ORIGINATED		John Carter 12-15-75	FRED DOLL	F. Doll 12-17-75

REVISIONS

DRN. DATE
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

NEXT HIGHER ASSY: B-DD-M7175-Ø

SCALE 2/1

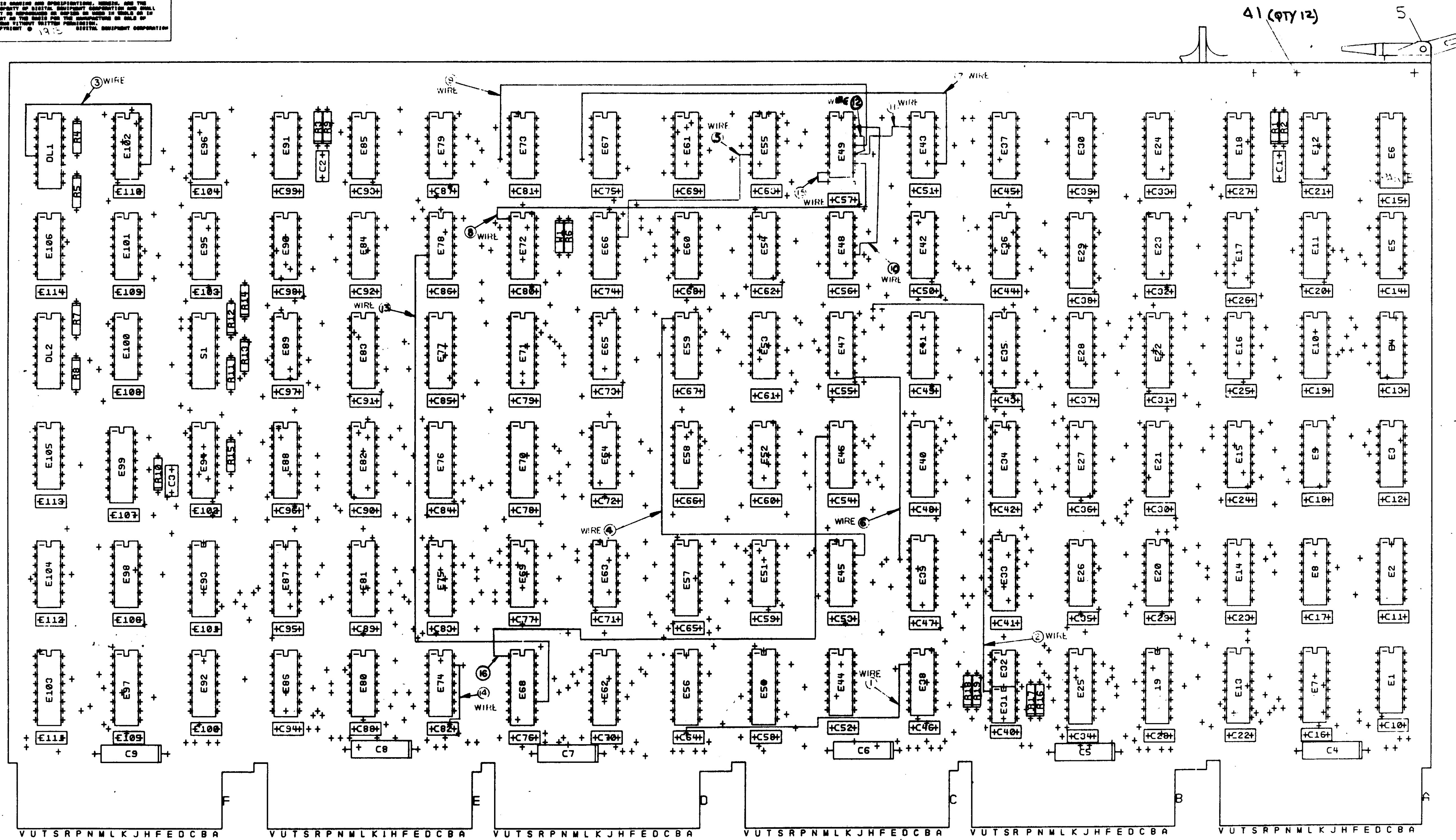
SHEET 1 OF 5

digital

TITLE: MEM MGR

SIZE	CODE	NUMBER	REV.
D	UA	M7175-Ø-Ø	B

DIST.



NOTES:

REV	CHANGE NO	CHK

SIGNATURES	DATE
DRN	
CHK'D	3 Oct 75
ENG.	10/2/75
PROJ.ENG.	10/2/75
PROD.	10-2-75
SCALE	
SHT. 2 OF 5	
ETCH REV	

digital

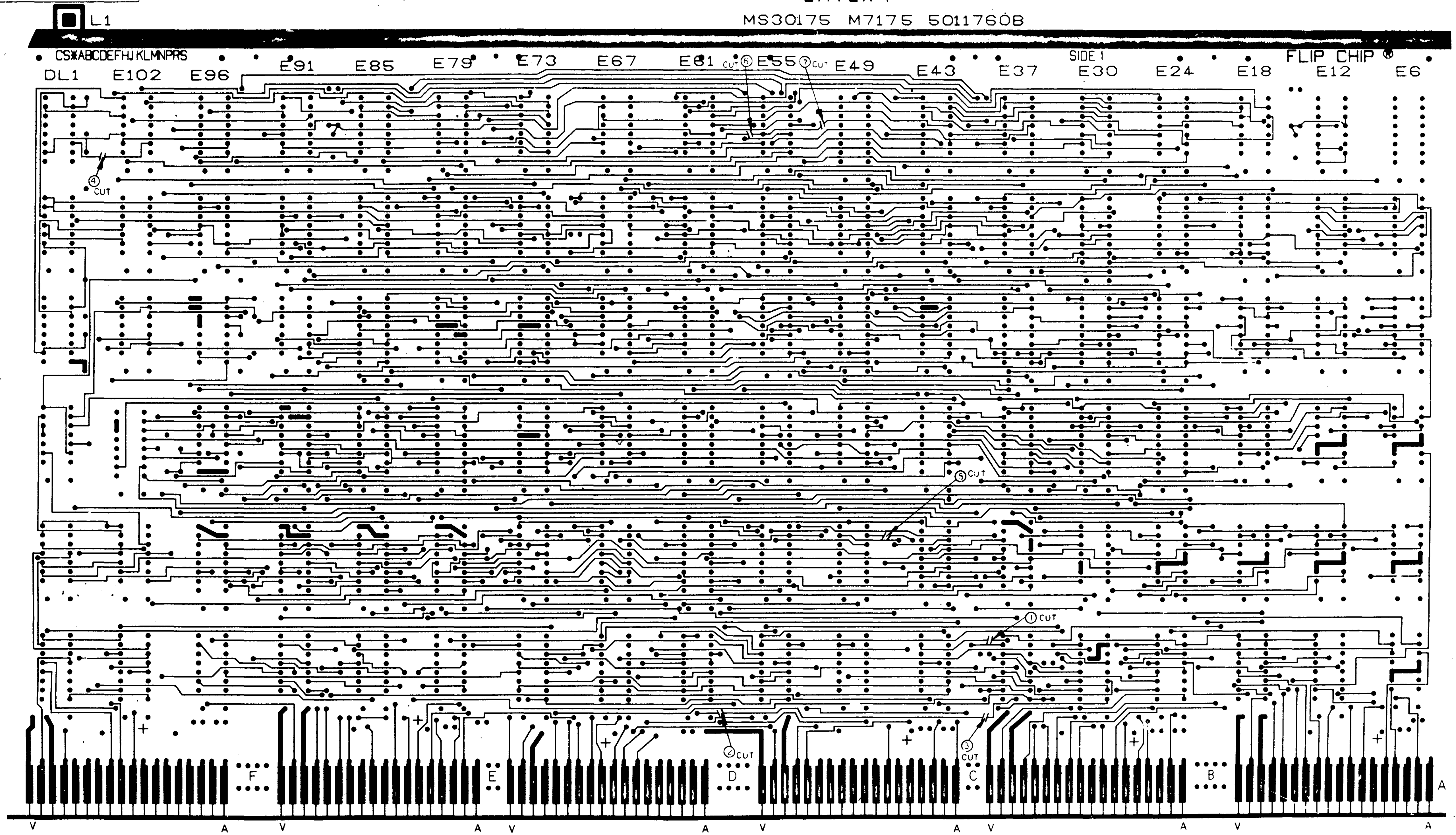
TITLE **MEM MGR**

SIZE	CODE	NUMBER	REV
D	UA	M7175-0-0	B

FIRST USED ON XM15

LAYER I

MS30175 M7175 5011760B



DATE		
MEM MGR	SHEET 3	D UA M7175 - Ø - Ø B

LAYER H

L4

MS30175 M7175 5011760B SIDE 2 MEM MGR

CUT

CUT

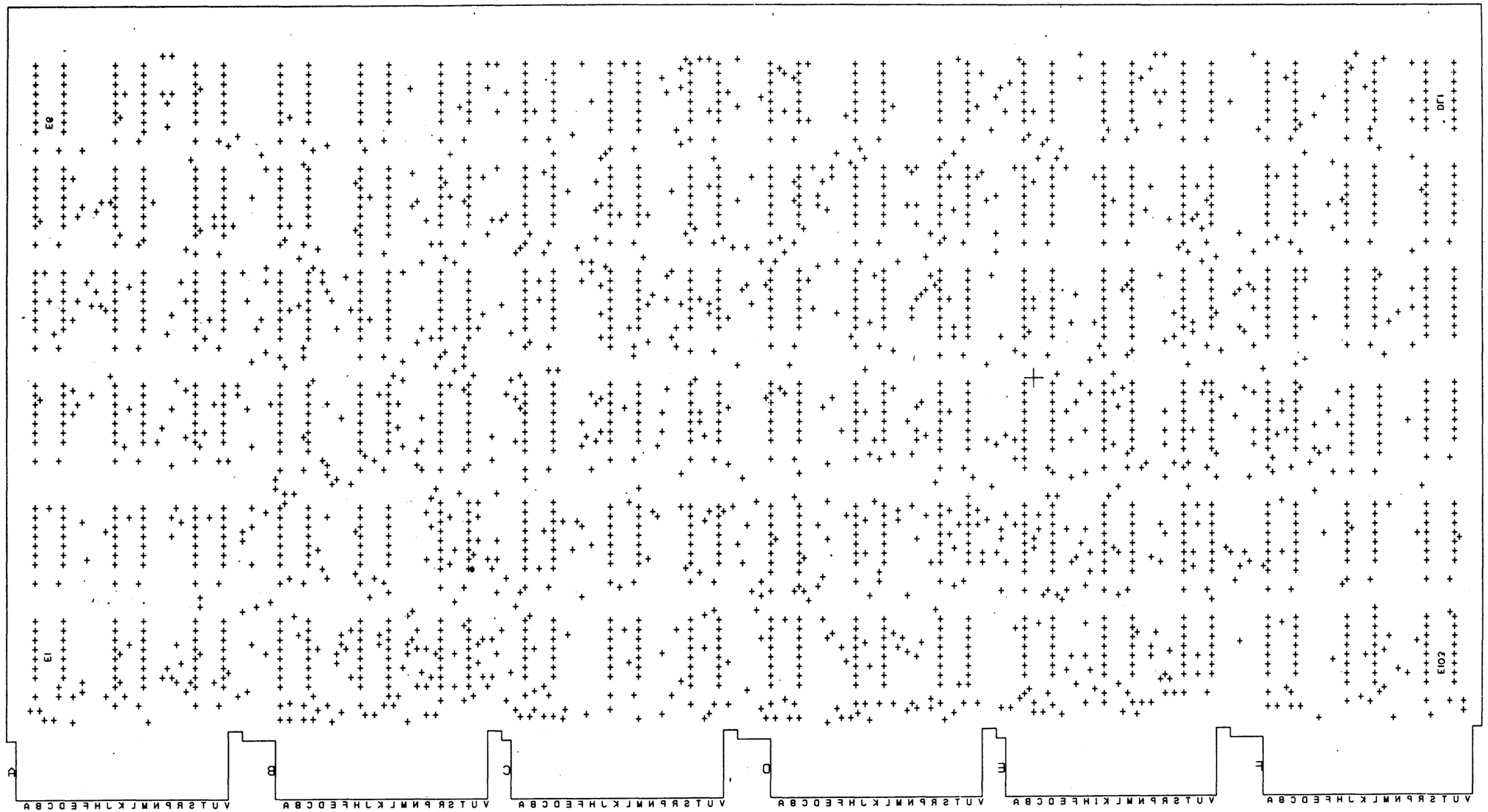
CUT

CUT

MEM MGR

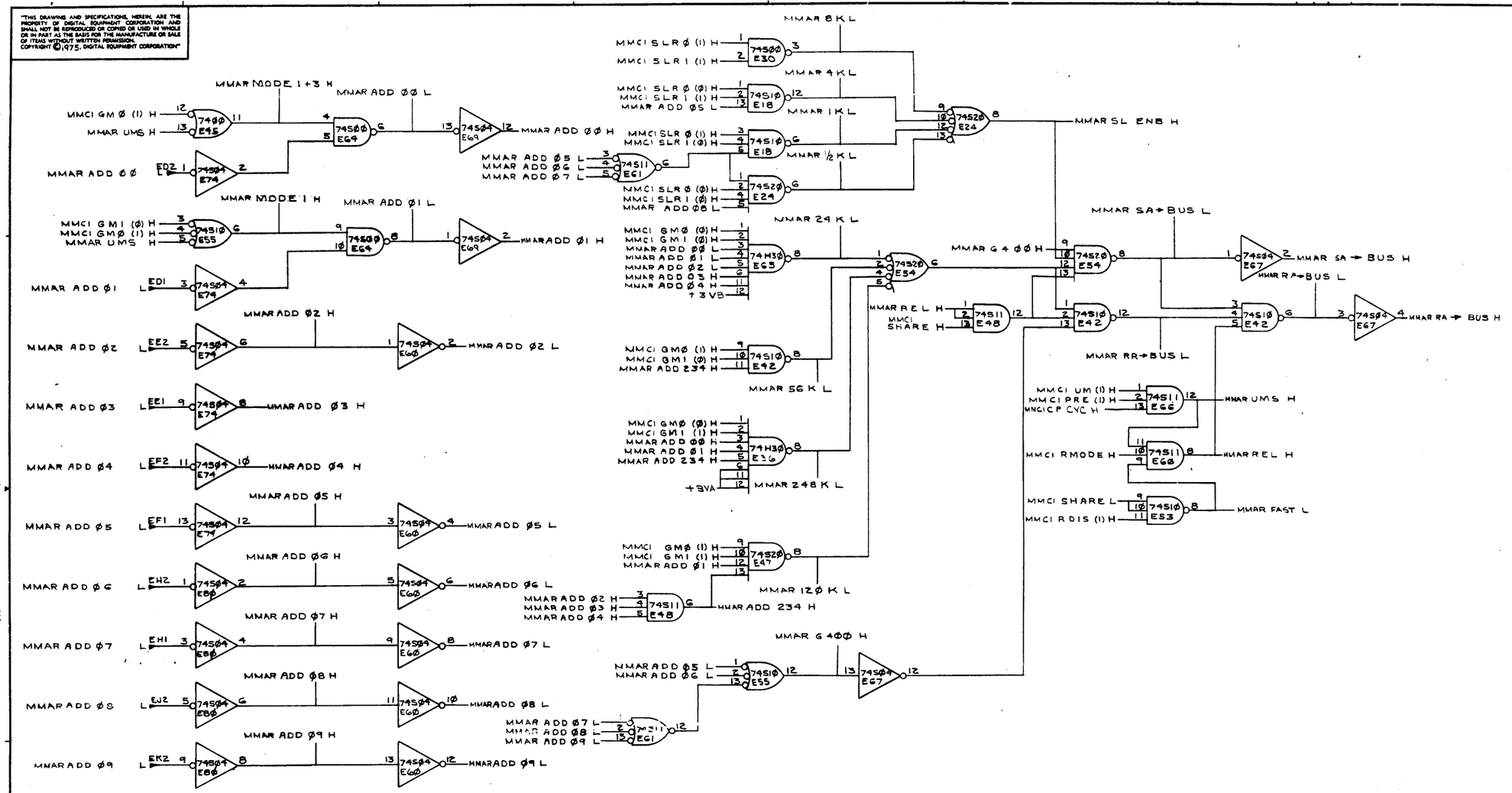
DUA M7175-0-0 B

2/1 4 5



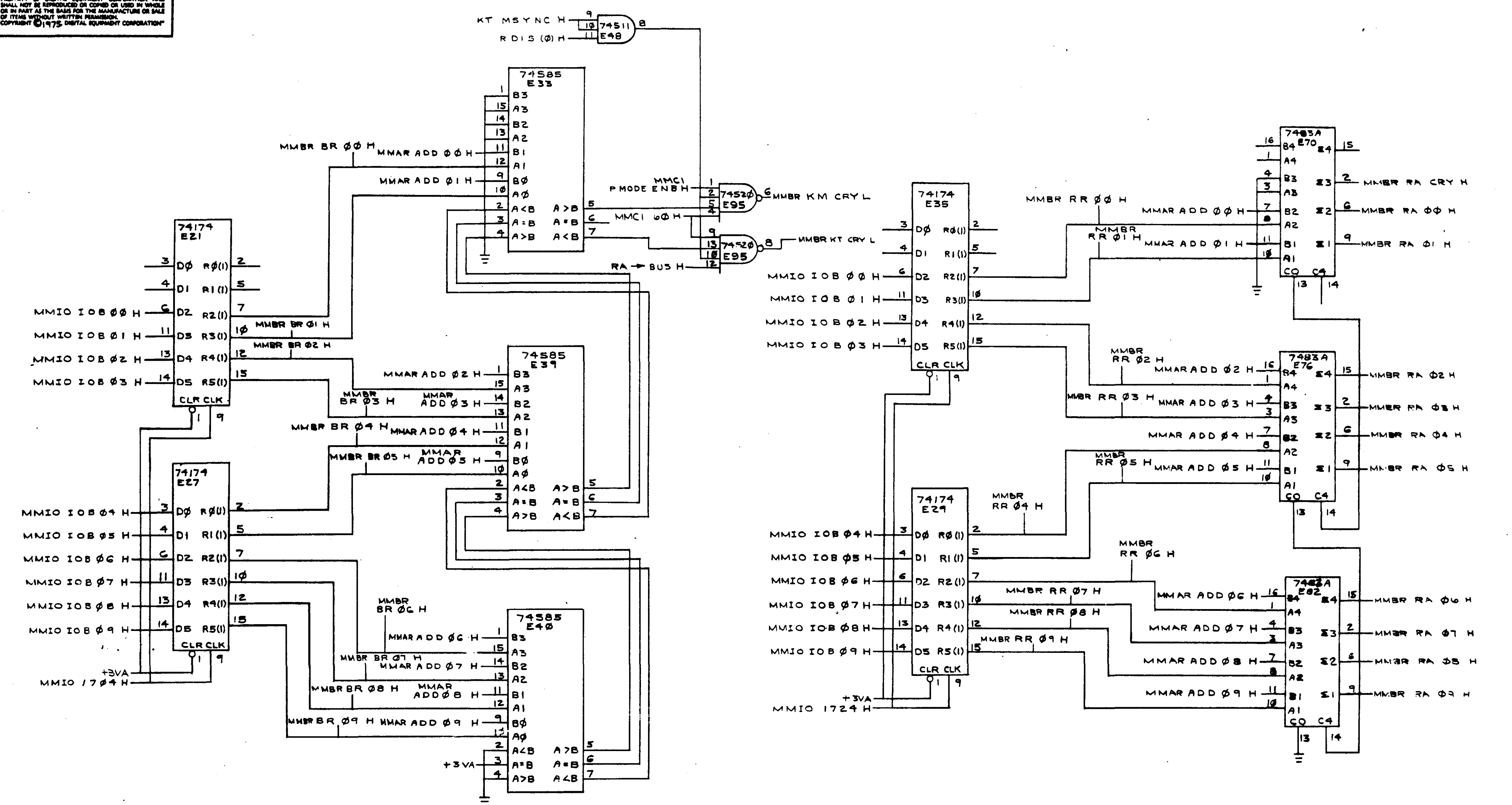
REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV
MEM MGR	D	UA	M7175-Ø-Ø	B
SCALE 2/1 SHEET 5 OF 5	DIST			



REVISIONS			
CHK	CHANGE NO.	REV.	
	ORIGINATED	A	
	M7175-00001	B	
	FRED DOLL		

DRN. A.E. Olsen	6/3/75	FIRST USED ON XM15
CHK'D		TITLE ADDRESS RECV. AND DECODE
ENG		
PROJ. ENG		
PROD		
NEXT HIGHER ASSY. B-DD-M7175-Ø		SIZE D CODE CS NUMBER M7175-Ø-MMAR REV. B
SCALE		
SHEET 1 OF 1		DIST.



REVISIONS	CHANGE NO.	REV.
	ORIGINATED	A
	M7175-00001 12-15-75 FRED DOLL	B

DRN. | CHK'D. | ENG. | PROJ. ENG. | PROD.

FIRST USED ON XM15

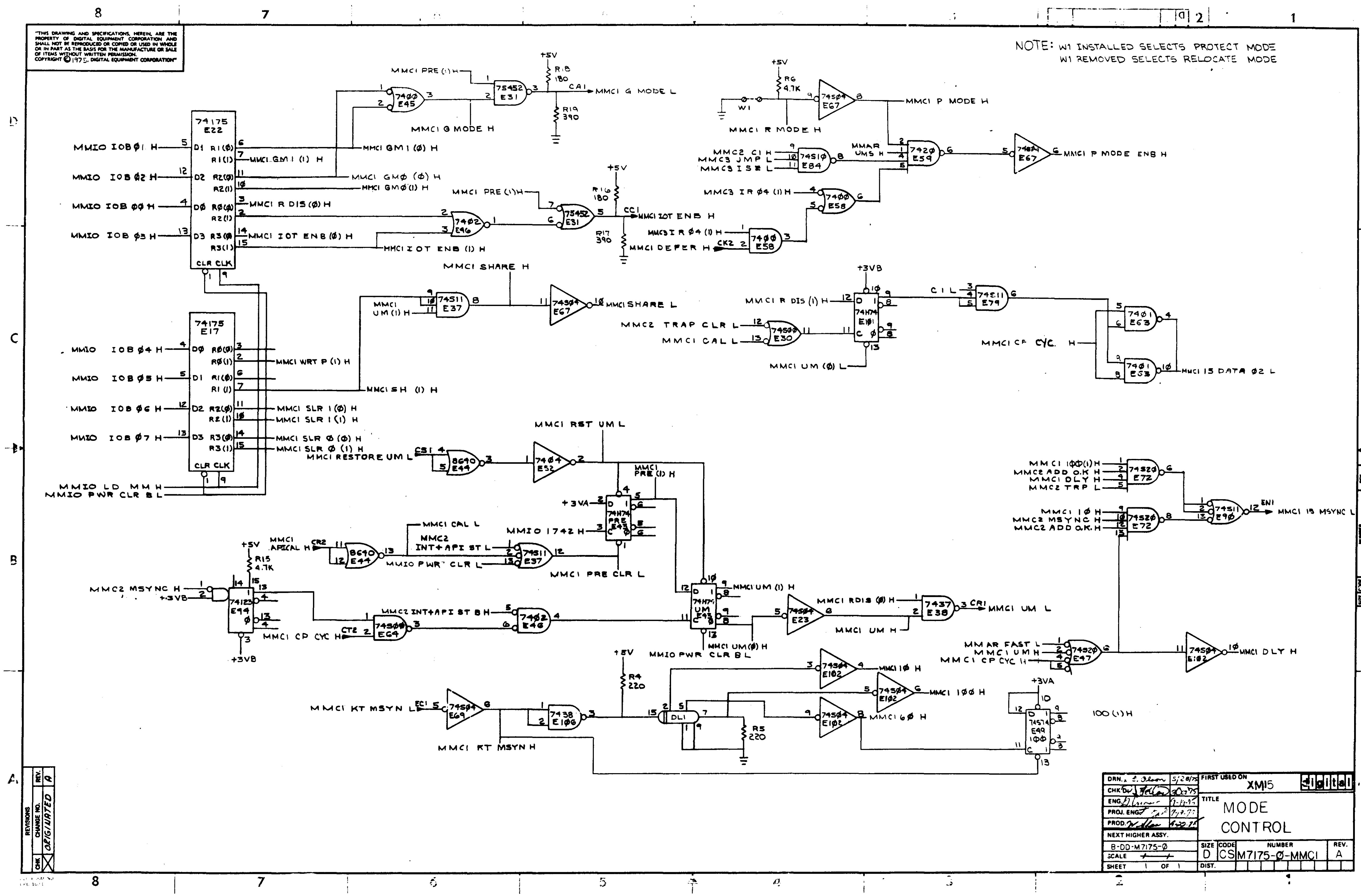
NEXT HIGHER ASSY. B-DD-M7175-0

SCALE — SHEET 1 OF 1

TITLE BOUNDARY AND RELOCATE REGISTERS

SIZE D | CODE CS | NUMBER M7175-Ø-MMBR | REV. B

DIST.



NOTE: W1 INSTALLED SELECTS PROTECT MODE
W1 REMOVED SELECTS RELOCATE MODE
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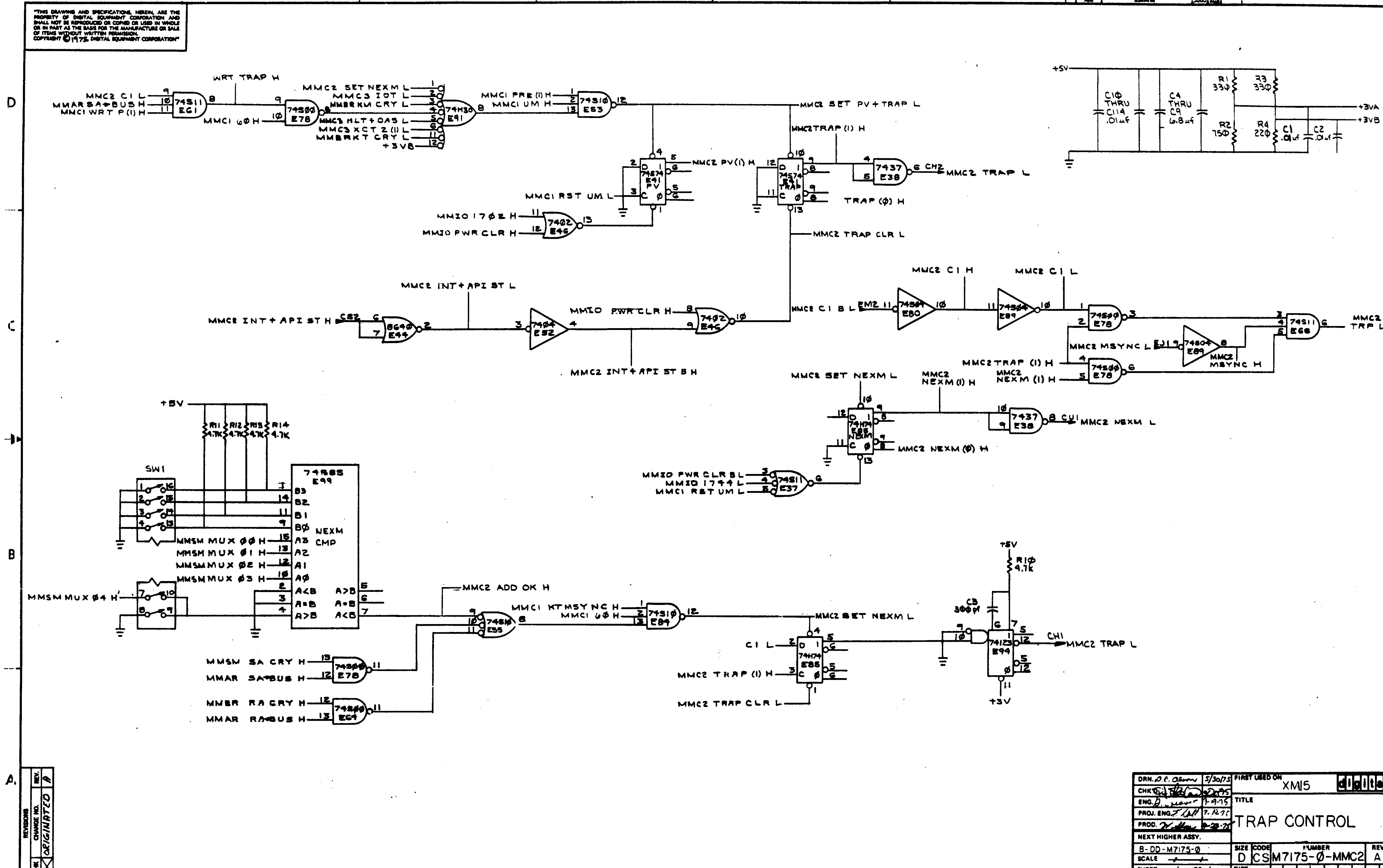
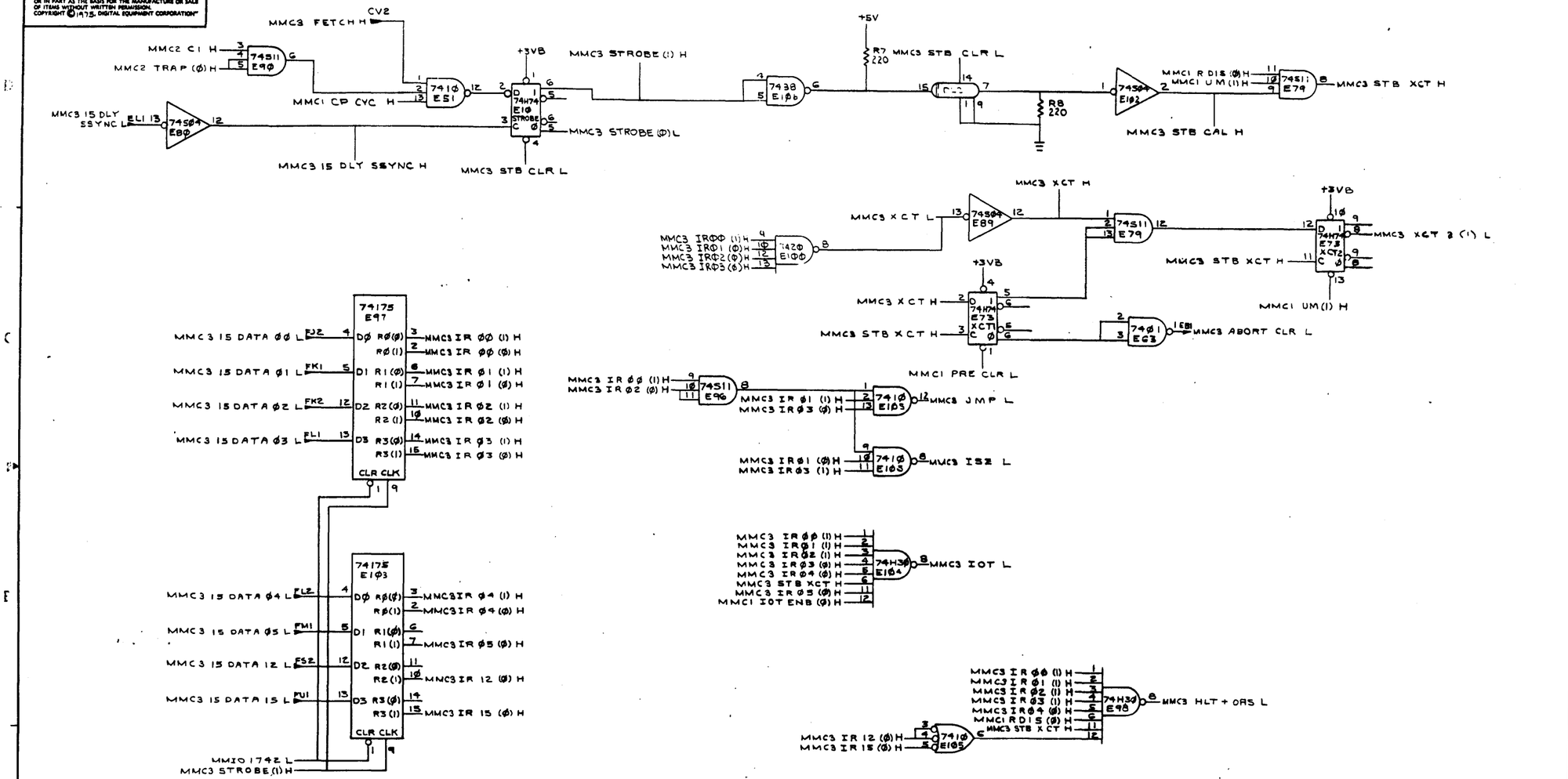
MMIO IOBØ1 H
MMIO IOB Ø2 H
MMIO IOB ØØ H
MMIO IOB Ø3 H
74175 E22
MMC1 GM1 (1) H
MMC1 GM1 (Ø) H
MMC1 GMØ (Ø) H
MMC1 GMØ (1) H
MMC1 R DIS (Ø) H
MMC1 IOT ENB (Ø) H
MMC1 IOT ENB (1) H
MMC1 PRE (1) H
7400 E45
75452 E31
MMC1 G MODE H
MMC1 G MODE L
MMC1 IOT ENB H
MMC1 DEFER H
MMC3 IR Ø4 (1) H
7402 E46
MMC1 SHARE H
MMC1 UM (1) H
74S11 E37
74SØ4 E67
MMC1 SHARE L
74175 E17
MMIO IOB Ø4 H
MMIO IOB Ø5 H
MMIO IOB Ø6 H
MMIO IOB Ø7 H
MMC1 WRT P (1) H
MMC1 SH (1) H
MMC1 SLR 1 (Ø) H
MMC1 SLR 1 (1) H
MMC1 SLR Ø (Ø) H
MMC1 SLR Ø (1) H
MMIO LD MM H
MMIO PWR CLR B L
MMC1 RESTORE UM L
MMC1 RST UM L
8640 E44
7404 E52
MMC1 PRE (1) H
74H74 PRE E43
MMIO 1742 H
MMC1 CAL L
MMC2 INT+API ST L
MMIO PWR CLR L
MMC1 PRE CLR L
MMC1 APICAL H
MMC2 MSYNC H
74123 E44
MMC1 CP CYC H
MMC2 INT+API ST B H
74SØØ E64
74Ø2 E46
74H74 UM E43
MMC1 UM (1) H
MMC1 UM (Ø) H
MMC1 RDIS (Ø) H
MMC1 UM H
7437 E38
MMC1 UM L
MMIO PWR CLR B L
MMC1 KT MSYN L
74SØ4 E69
7438 E1Ø6
DL1
MMC1 KT MSYN H
74SØ4 E1Ø2
MMC1 1Ø H
MMC1 1ØØ H
MMC1 6Ø H
74S74 E49 1ØØ
100 (1) H
MMC1 P MODE H
MMC1 R MODE H
MMC2 C1 H
MMC3 JMP L
MMC3 IS L
MMAR UMS H
74S1Ø E84
742Ø E59
MMC1 P MODE ENB H
MMC3 IR Ø4 (1) H
7400 E58
MMC1 R DIS (1) H
MMC2 TRAP CLR L
MMC1 CAL L
74S00 E30
74H74 E1Ø1
MMC1 UM (Ø) L
C1 L
74S11 E79
7401 E63
MMC1 CP CYC H
MMC1 15 DATA Ø2 L
MMC1 1ØØ (1) H
MMC2 ADD O.K H
MMC1 DLY H
MMC2 TRP L
74S2Ø E72
MMC1 1Ø H
MMC2 MSYNC H
MMC2 ADD O.K H
74S11 E9Ø
MMC1 15 MSYNC L
MMAR FAST L
MMC1 UM H
MMC1 CP CYC H
74S2Ø E47
74SØ4 E1Ø2
MMC1 DLY H
DRN. 5/20/75
CHK'D
ENG.
PROJ. ENG.
PROD.
FIRST USED ON XM15
digital
TITLE MODE CONTROL
NEXT HIGHER ASSY. B-DD-M7175-Ø
SIZE D
CODE CS
NUMBER M7175-Ø-MMC1
REV. A
SCALE
SHEET 1 OF 1
DIST.
REVISIONS
REV. A
CHANGE NO. ORIGINATED


WRT TRAP H
MMC2 C1 L
MMAR SA+BUS H
MMC1 WRT P (1) H
MMC1 60 H
MMC2 SET NEXM L
MMC3 IOT L
MMBR KM CRY L
MMC3 HLT+OAS L
MMC3 XCT 2 (1) L
MMBRKT CRY L
+3VB
MMC1 PRE (1) H
MMC1 UM H
MMC2 SET PV+TRAP L
MMC2 PV (1) H
MMC1 RST UM L
MMIO 1702 H
MMIO PWR CLR H
MMC2 TRAP (1) H
MMC2 TRAP L
TRAP (0) H
MMC2 TRAP CLR L
MMC2 C1 H
MMC2 C1 L
MMC2 INT+API ST L
MMC2 INT+API ST H
MMIO PWR CLR H
MMC2 C1 B L
MMC2 TRP L
MMC2 MSYNC L
MMC2 MSYNC H
MMC2 TRAP (1) H
MMC2 NEXM (1) H
MMC2 INT+API ST B H
MMC2 SET NEXM L
MMC2 NEXM L
MMC2 NEXM (0) H
MMIO PWR CLR B L
MMIO 1744 L
MMC1 RST UM L
+5V
SW1
NEXM CMP
MMSM MUX 00 H
MMSM MUX 01 H
MMSM MUX 02 H
MMSM MUX 03 H
MMSM MUX 04 H
MMC2 ADD OK H
MMC1 KTMSYNC H
MMC1 60 H
MMSM SA CRY H
MMAR SA+BUS H
MMBR RA CRY H
MMAR RA+BUS H
MMC2 SET NEXM L
C1 L
MMC2 TRAP (1) H
MMC2 TRAP CLR L
MMC2 TRAP L
+3V

REV.	CHANGE NO.	REVISIONS
0	ORIGINATED	

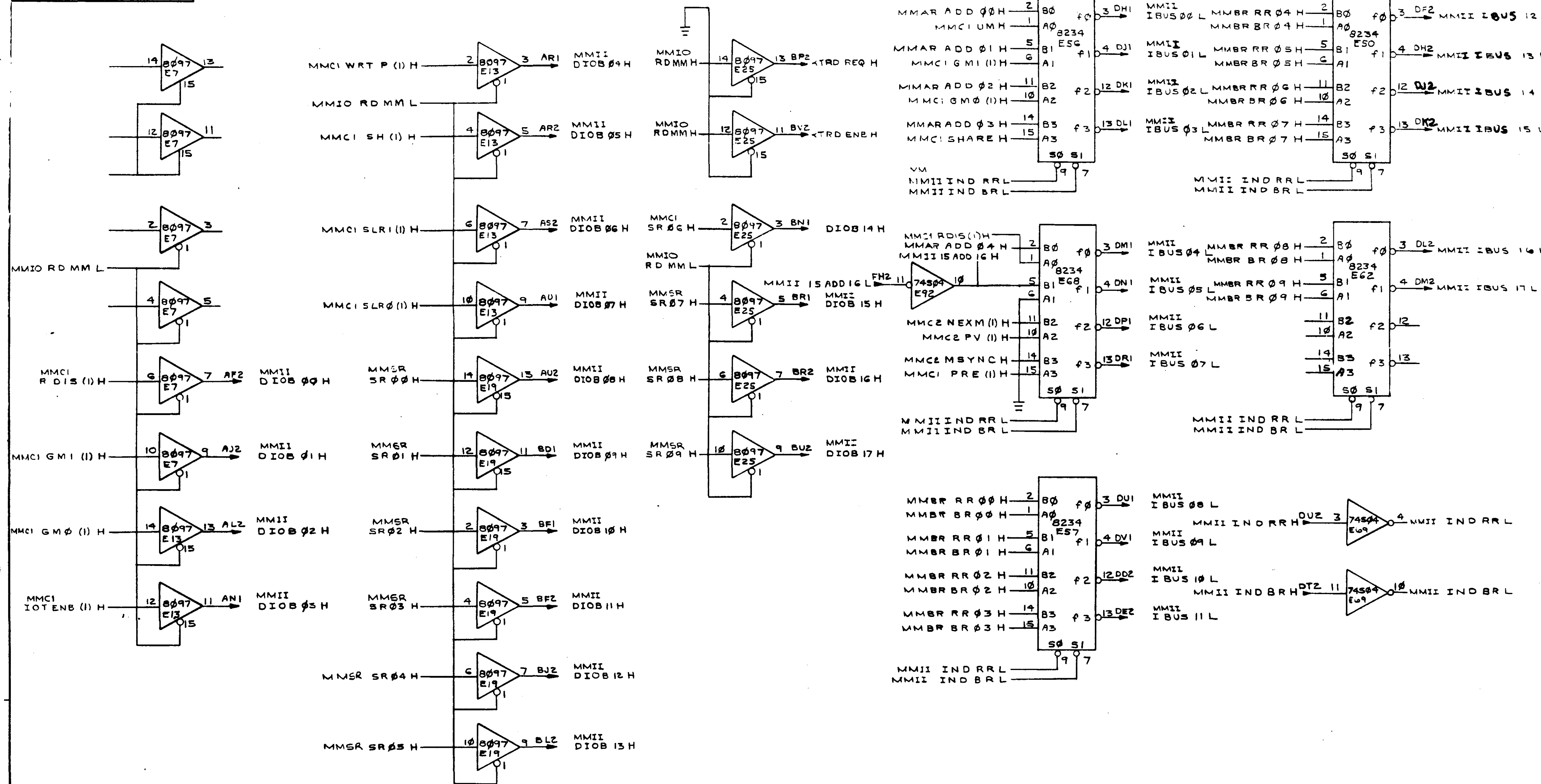
FIRST USED ON	XM15
TITLE	TRAP CONTROL
NEXT HIGHER ASSY.	B-DD-M7175-0
SIZE	D
CODE	CS
NUMBER	M7175-0-MMC2
REV.	A
SHEET	1 OF 1

digital



REVISIONS		
CHK	CHANGE NO.	REV.
X	ORIGINATED	A

DRN. BC Olsen	6/2/75	FIRST USED ON XM15
CHK'D		TITLE INST DECODE
ENG.		
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY.		
B-DD-M7175-Ø		SIZE D CODE CS NUMBER M7175-Ø-MMC3 REV. A
SCALE		
SHEET 1 OF 1		DIST.


8097 E7
8097 E13
8097 E19
8097 E25
MMIO RD MM L
MMCI R DIS (1) H
MMII DIOB ØØ H
MMCI GM1 (1) H
MMII DIOB Ø1 H
MMCI GMØ (1) H
MMII DIOB Ø2 H
MMCI IOT ENB (1) H
MMII DIOB Ø3 H
MMCI WRT P (1) H
MMII DIOB Ø4 H
MMCI SH (1) H
MMII DIOB Ø5 H
MMCI SLR1 (1) H
MMII DIOB Ø6 H
MMCI SLRØ (1) H
MMII DIOB Ø7 H
MMSR SRØØ H
MMII DIOB Ø8 H
MMSR SRØ1 H
MMII DIOB Ø9 H
MMSR SRØ2 H
MMII DIOB 1Ø H
MMSR SRØ3 H
MMII DIOB 11 H
MMSR SRØ4 H
MMII DIOB 12 H
MMSR SRØ5 H
MMII DIOB 13 H
MMIO RDMM H
TRD REQ H
TRD ENB H
MMCI SRØ6 H
DIOB 14 H
MMSR SRØ7 H
MMII DIOB 15 H
MMSR SRØ8 H
MMII DIOB 16 H
MMSR SRØ9 H
MMII DIOB 17 H
8234 E56
MMAR ADD ØØ H
MMCI UM H
MMAR ADD Ø1 H
MMCI GM1 (1) H
MMAR ADD Ø2 H
MMCI GMØ (1) H
MMAR ADD Ø3 H
MMCI SHARE H
MMII IND RR L
MMII IND BR L
MMII IBUS ØØ L
MMII IBUS Ø1 L
MMII IBUS Ø2 L
MMII IBUS Ø3 L
8234 E50
MMBR RRØ4 H
MMBR BRØ4 H
MMBR RRØ5 H
MMBR BRØ5 H
MMBR RRØ6 H
MMBR BRØ6 H
MMBR RRØ7 H
MMBR BRØ7 H
MMII IBUS 12 L
MMII IBUS 13 L
MMII IBUS 14 L
MMII IBUS 15 L
8234 E68
MMCI RDIS (1) H
MMAR ADD Ø4 H
MMII 15 ADD 16 H
MMII 15 ADD 16 L
74S04 E92
MMCE NEXM (1) H
MMCE PV (1) H
MMCE MSYNC H
MMCI PRE (1) H
MMII IBUS Ø4 L
MMII IBUS Ø5 L
MMII IBUS Ø6 L
MMII IBUS Ø7 L
8234 E62
MMBR RRØ8 H
MMBR BRØ8 H
MMBR RRØ9 H
MMBR BRØ9 H
MMII IBUS 16 L
MMII IBUS 17 L
8234 E57
MMBR RRØØ H
MMBR BRØØ H
MMBR RRØ1 H
MMBR BRØ1 H
MMBR RRØ2 H
MMBR BRØ2 H
MMBR RRØ3 H
MMBR BRØ3 H
MMII IBUS Ø8 L
MMII IBUS Ø9 L
MMII IBUS 1Ø L
MMII IBUS 11 L
MMII IND RR H
MMII IND RR L
MMII IND BR H
MMII IND BR L
74S04 E69

REVISIONS		
REV.	CHANGE NO.	CHK
A	ORIGINATED	

DRN. D. C. Olson 6/4/75
CHK'D.
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY. B-CD M7175-Ø
SCALE —
SHEET 1 OF 1

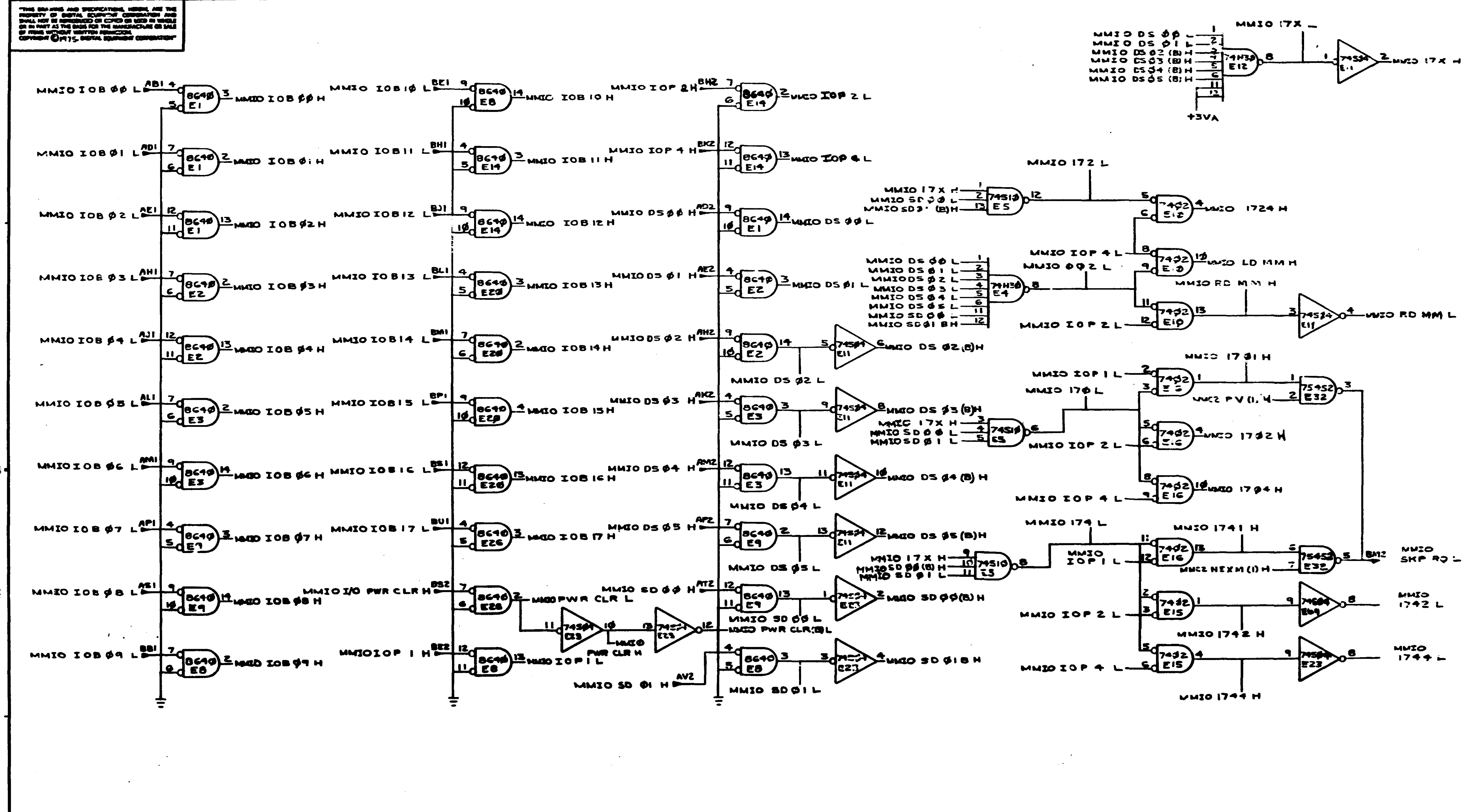
FIRST USED ON XM15

digital

TITLE I AND I/O BUSS DRIVERS

SIZE D CODE CS NUMBER M7175-Ø-MMII REV. A

DIST.

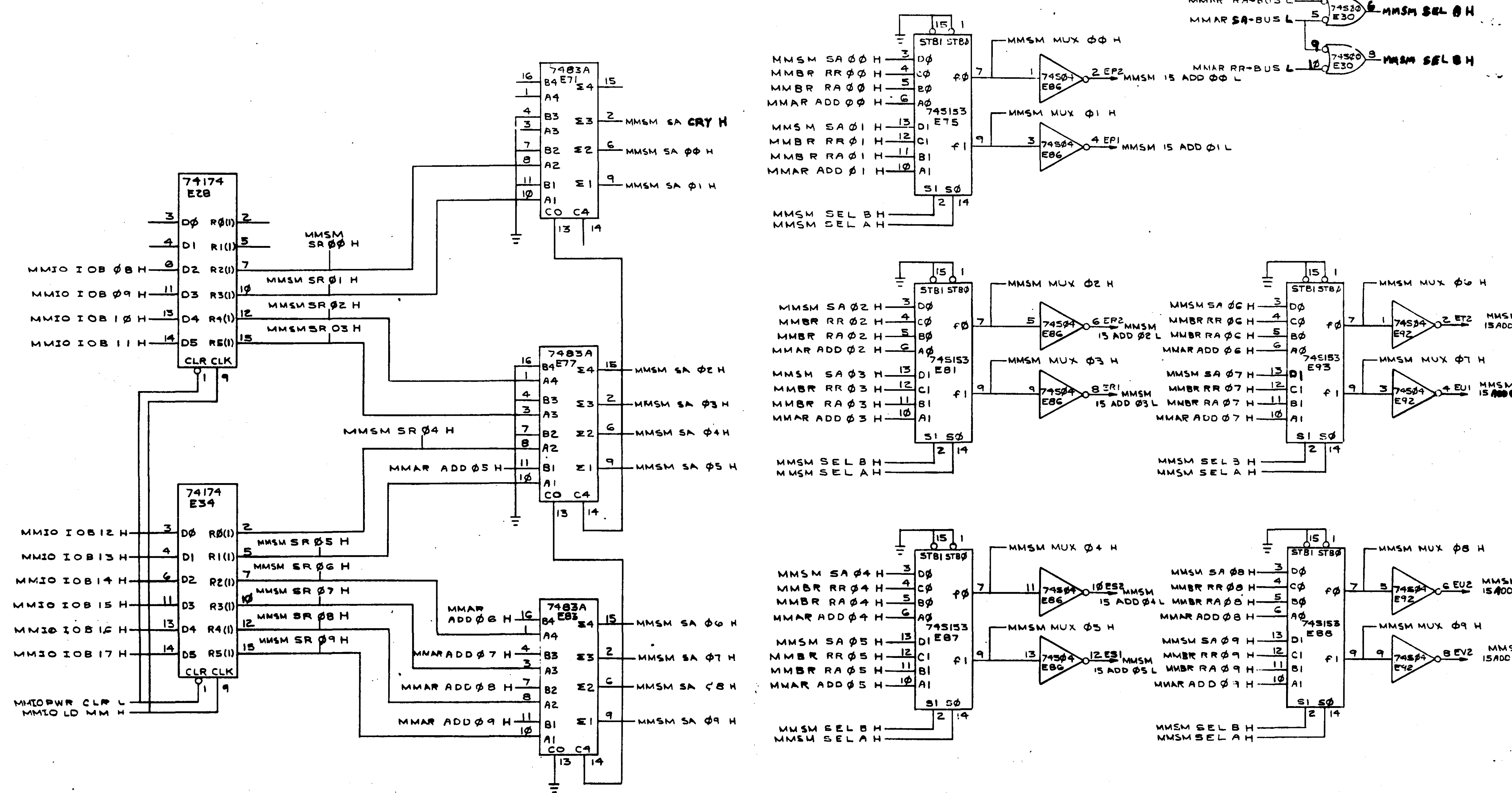


FIRST USED ON XM15

TITLE: IOB RECV AND DECODE

SIZE D CS M7175-0-MMIO REV. A

REVISIONS: ORIGINATED A



REV.	CHANGE NO.	REVISIONS
A	ORIGINATED	
B	M7175-00001	12-15-75 FRED DOLL

DRN.	D.E. Olsen 5/6/75
CHK'D	
ENG.	
PROJ. ENG.	
PROD.	
NEXT HIGHER ASSY.	D DD M7175-0
SCALE	
SHEET	1 OF 1

FIRST USED ON XM15

digital

TITLE SHARE REGISTER AND ADDRESS MUX

SIZE D | CODE | NUMBER CSM7175-Ø-MMSM | REV. B

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS
PARTS LIST

MADE BY R.W. Counter DATE 13-NOV-75	CHECKED DATE 14 Nov 75	SECTION
ENG DATE 14 Nov 75	PROD DATE 14 Nov 75	ISSUED SECT.

ITEM NO.	DWG NO./PART NO.	DESCRIPTION	QUANTITY/VARIATION
1	ZM145-RB	XM15 Diagnostic Kit	1
2	EK-15XVM-MM-001	XVM Systems Maintenance Manual	1
3	EK-15XVM-OP-001	XVM Systems Reference Manual	1
4	EK-MF15-MM-001	MF15 Core Memory Maintenance Manual	1
5	EK-BA11K-MM-002	BA11K Mounting Box Manual	1
6	EK-861AB-MM-002	861 PC Maintenance Manual	1
7	H950-S	Fan Filters	1
8	MP-00013	XM15 Print Set	1
9	MP-00009	MF15 Print Set	1
10	B-DD-BA11-K	BA11K Print Set	1
11	B-DD-861-D	861D Print Set	1
12	B-DD-861-E	861E Print Set	1

TITLE	ASSY NO.	SIZE	CODE	NUMBER	REV.	ECO NO
XM15 Shipping List	B-DD-XM15 -Ø	A	PL	XM15-0-8		
	SHEET 1 OF 1	DIST.				

NOTES:

1. FOR DRAWING DIRECTORY, REFER TO B-DD-M7176-0
2. UNLESS OTHERWISE SPECIFIED, THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	+5V	GND
16 PIN DIP	16	8
14 PIN DIP	14	7
8640	8	1

ETCH CUTS SIDE #1 AS SHOWN:

1. CUT ETCH FROM E10(7) TO E15(9)
2. CUT ETCH FROM E10(12) TO E20(1) NEAR E10(2)
3. CUT ETCH FROM E13(11) TO E8(11)
4. CUT ETCH AT E10(11)

ETCH CUTS SIDE #2 AS SHOWN:

1-2. CUT ETCH FROM P.T.H. NEAR E13(4) TO E11(3)

WIRE ADDS SIDE #1 AS SHOWN:

1. ADD WIRE FROM E10(7) TO E20(3)
2. ADD WIRE FROM E10(12) TO E5(7)
3. ADD WIRE FROM E5(2) TO E5(4)
4. ADD WIRE FROM E5(3) TO E20(1)
5. ADD WIRE FROM E5(8) TO FINGER CF1
6. ADD WIRE FROM E5(5) TO FINGER CK1
7. ADD WIRE FROM E11(3) TO E10(11) (DO NOT SOLDER)
8. ADD WIRE FROM E10(11) TO E8(11) (DO NOT SOLDER)
9. ADD WIRE FROM E8(11) TO E3(3) (SOLDER #7,8 AND 9)
10. ADD WIRE FROM E3(4) TO E13(11)
11. ADD WIRE FROM E24(9) TO FINGER CA1.

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011721	1
112	C1 THRU C110,C113,C114	CAP .01uf 100V 20%	1001610 01	2
2	C111,C112	CAP .047uf 16V	1009678	3
6	C115 THRU C120	CAP. 6.8uf 35V 10%	1005306	4
2		INSULATOR AUGAT	1202812	5
1		HANDLE, HEX MODULE	1210711-00	6
3	R1,R3,R5	RES 330 5% ¼W	1300295	7
3	R2,R4,R6	RES. 750 5% ¼W	1301401	8
1	R7	RES. 470 5% ¼W	13003[illegible]	9
2	R8,R9	RES. 10K 5% ¼W	1300479	10
1	R10	RES. 4.7K 5% ¼W	1300447	11
1	CR1	CRYSTAL 1MHZ	1805501 01	12
13	E1,E2,E5,E6,E11,E16,E21, E33,E34,E40,E81,E87,E93	I.C. DEC 8640	1911469	13
11	E3,E30,E53,E54,E59,E66, E69,E86,E92,E108,E29	I.C. DEC 74H04	1909931	14
1	E4	I.C. DEC 74123	1910436	15
5	E7,E12,E17,E22,E28	I.C. DEC 74S257	19116[illegible]	16
5	E8,E13,E18,E96,E107	I.C. DEC 7430	1905578	17
5	E9,E14,E15,E19,E24	I.C. DEC 74161	1910650	18
1	E10	I.C. DEC 7490	1909051	19
16	E20,E38,E44,E50,E61,E67, E71,E73,E76,E77,E83,E85, E91,E98,E109,E110	I.C. DEC 7474	1905547	20
18	E23,E32,E41,E43,E47,E48, E55,E62,E65,E74,E78,E79, E80,E84,E94,E97,E101,E106	I.C. DEC 7402	1909004	21
9	E25,E35,E46,E52,E60,E89, E102,E103,E104	I.C. DEC 7400	1905575	22
1	E27	I.C. DEC 75453	1911036	23
9	E31,E36,E37,E57,E58,E63, E64,E70,E99	I.C. DEC 7401	1905590	24
3	E39,E45,E51	I.C. DEC 8097	1911527	25
4	E42,E49,E56,E68	I.C. DEC 7450	1905580	26
1	E72	I.C. DEC 7410	1905576	27
1	E75	I.C. DEC 7437	1910091	28
2	E82,E88	I.C. DEC 74H11	1909267	29
1	E90	I.C. DEC 74175	1910651	30
1	E95	I.C. DEC 74H40	1905586	31
1	E100	I.C. DEC 7427	1910878	32
1		BRKT. HOLDER	5302825	33
1		BRKT. SUPPORT	5303154	34
3		SCR #2-56 X1-3/16 LG.	9006000-4	35
3		NUT #2-56	9006555	36
12		EYELET #GS4-7	9006732	37
3		INT TOOTH LOCKWASHER #2	9006631	38

PARTS LIST

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL: XM15

ETCH ~~BOARD R.V.~~

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

ORIGINATED A — REV. — CHANGE NO. — REVISIONS — CHK

DRN. / DATE / CHK'D. / DATE / ENG. / DATE / PROJ. ENG. / DATE / PROD. / DATE

NEXT HIGHER ASSY: B-CL-M7176-0

SCALE

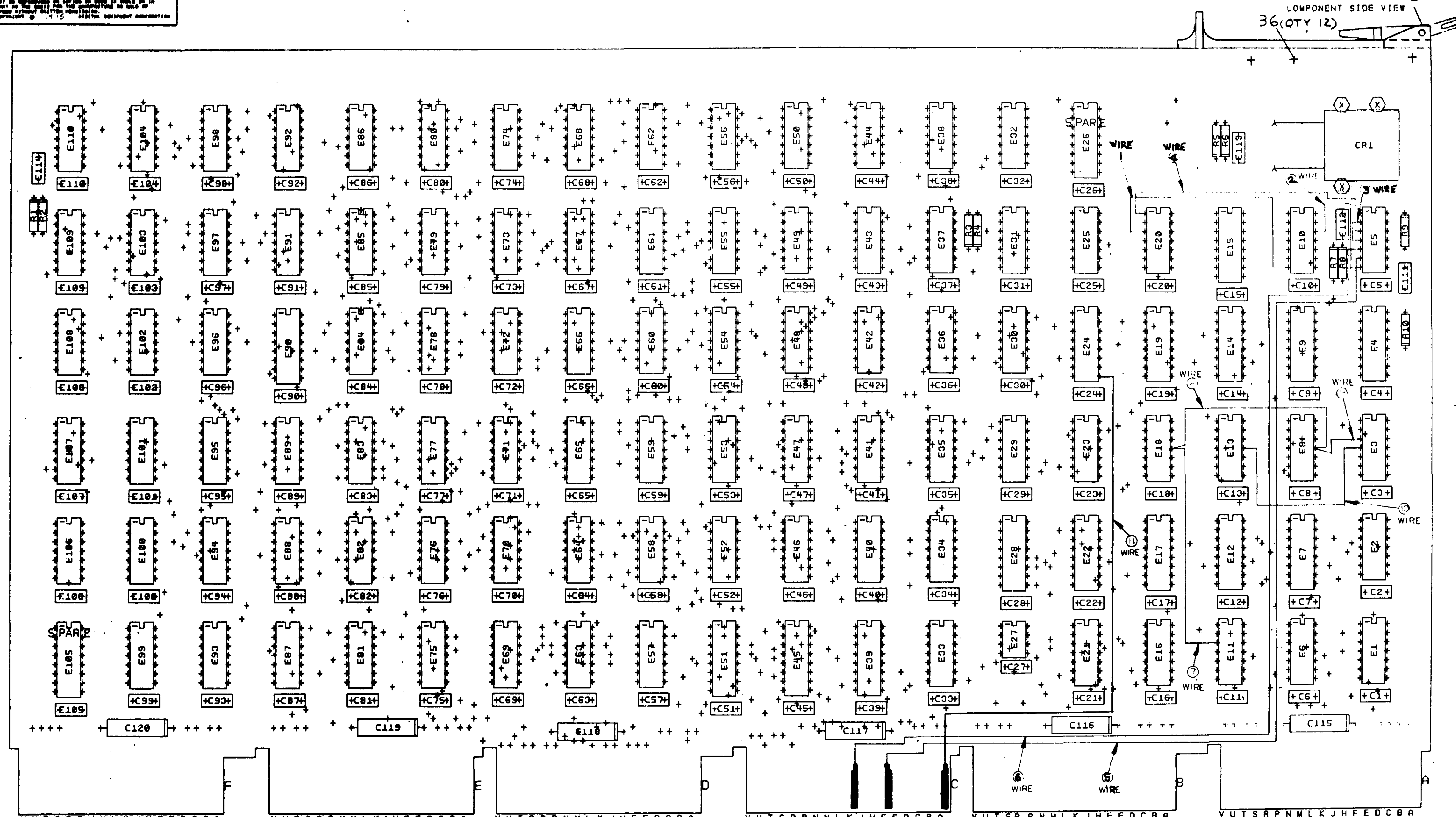
SHEET 1 OF 5

digital

TITLE: API

SIZE D | CODE UA | NUMBER M7176-0-0 | REV. A

DIST.



NOTES:

CHG NO	CHANGE NO	REV

SIGNATURES	DATE
DRN. C HALL	6/20/75
CHK'D.	3/20/75
ENG.	9-17-75
PROJ. ENG.	9/1/75
PROD.	9-22-75
SCALE 2/1	
SHT. 2 OF 5	
ETCH REV B	

digital

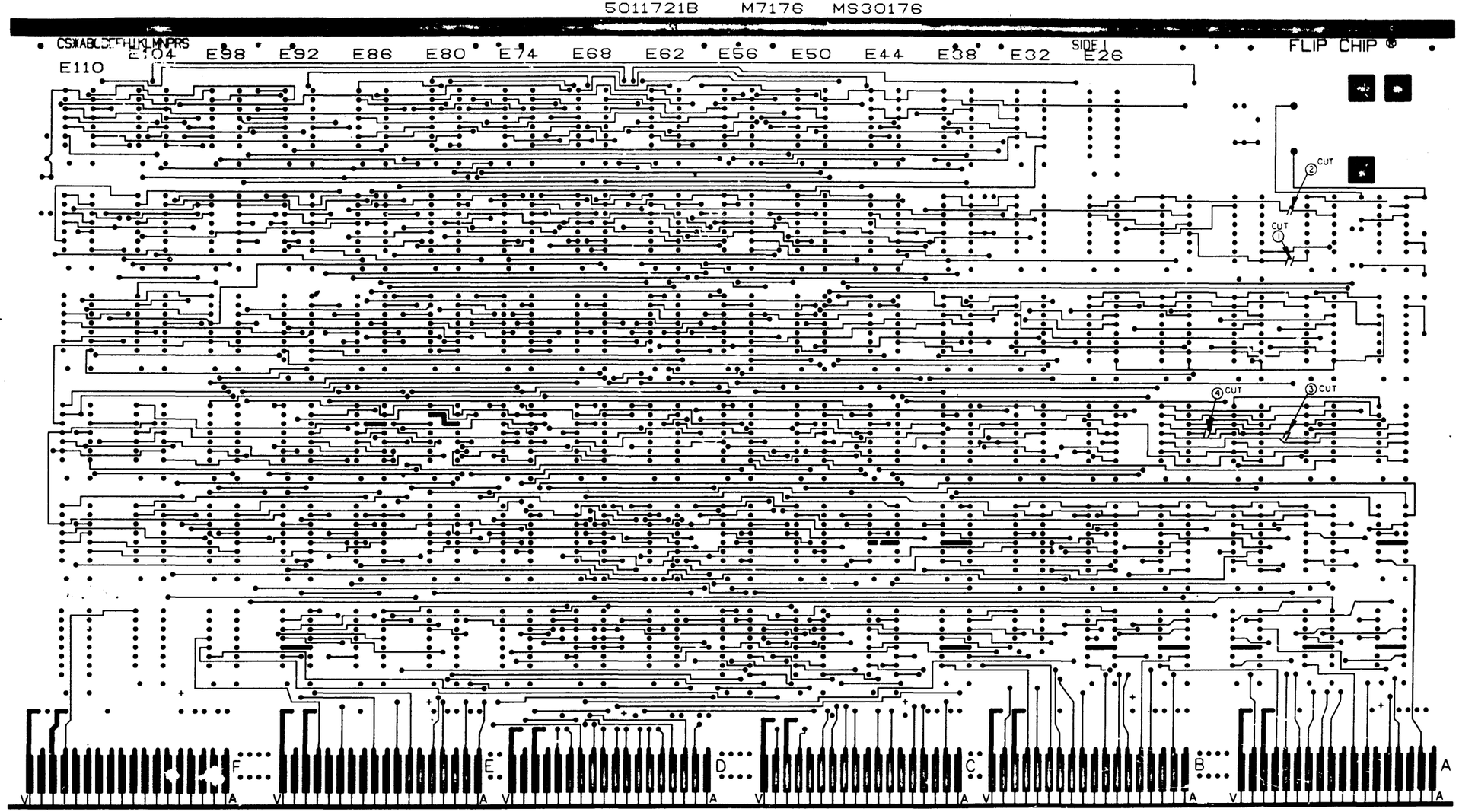
TITLE API

SIZE	CODE	NUMBER	REV
D	UA	M7176ØØ	A

FIRST USED ON XM15

LAYER 1

5011721B M7176 MS30176



(LAYER 1)

REVISIONS		
CHK	CHANGE NO	REV

TITLE: API		SIZE: D	CODE: UA
SCALE:	SHEET 3 OF 5	NUMBER: M7176-0-0	REV: A
		DIST	

LAYER 4

A P I

SIDE 2

5011721B M7176 MS30176

1 CUT

2 CUT

A B C D E F

V A V A V A V A V A V

(LAYER 4)

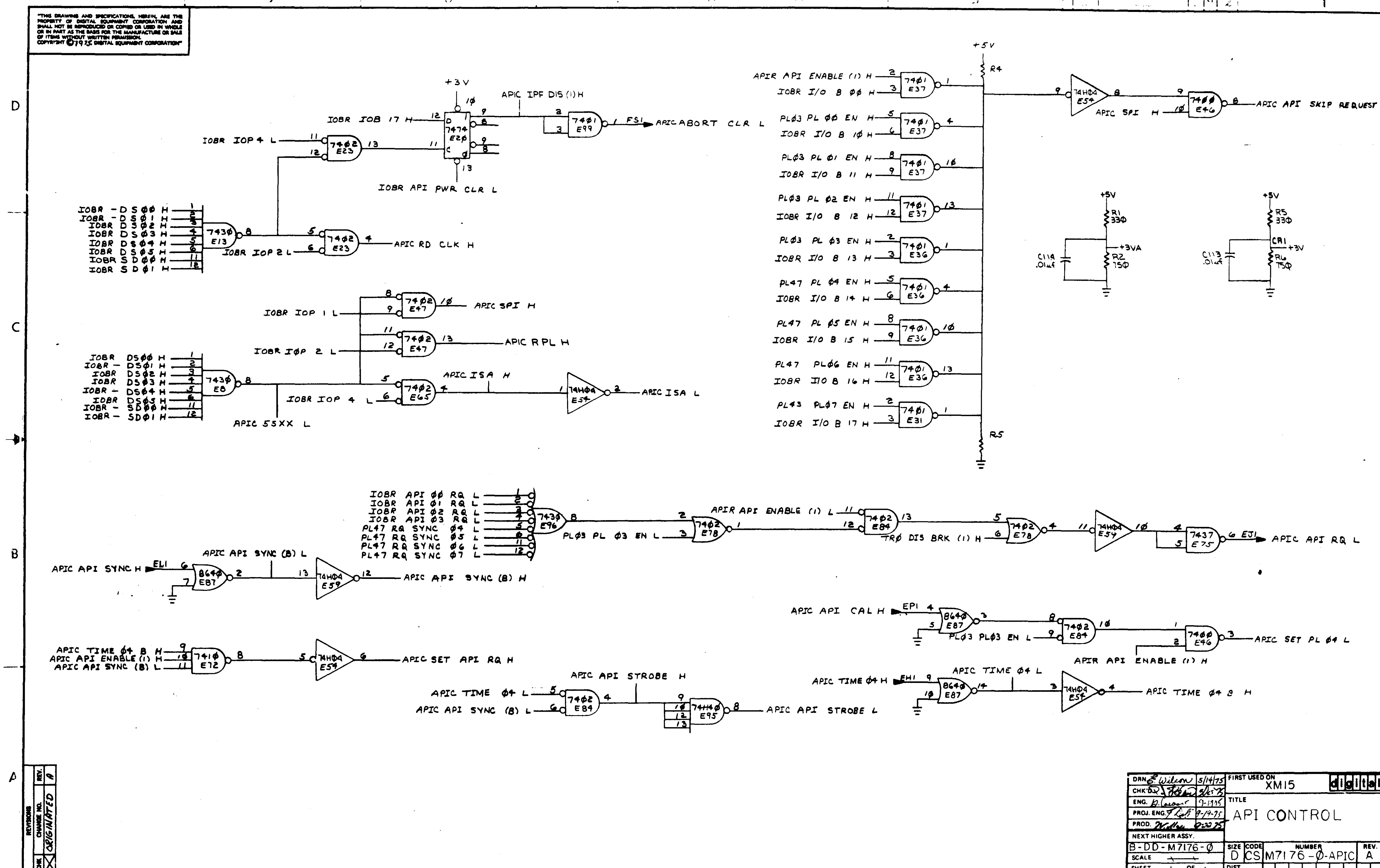
REVISIONS		
CHK	CHANGE NO	REV

TITLE	API	
SCALE	SHEET 4 OF 5	

SIZE	CODE	NUMBER	REV.
D	UA	M7176-00-00	A
DIST			

REVISIONS		
CHK	CHANGE NO.	REV

TITLE	SIZE	CODE	NUMBER	REV.
API	D	UA	M7176-Ø-Ø	A
SCALE	SHEET 5 OF 5	DIST		



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IOBR IOB 17 H
IOBR IOP 4 L
IOBR API PWR CLR L
APIC IPF DIS (1) H
APIC ABORT CLR L
APIC RD CLK H
IOBR IOP 2 L
IOBR IOP 1 L
APIC SPI H
IOBR IOP 2 L
APIC RPL H
APIC ISA H
APIC ISA L
APIC 55XX L
APIR API ENABLE (1) H
IOBR I/O B 00 H
APIC API SKIP REQUEST L
APIC SPI H
IOBR API 00 RQ L
IOBR API 01 RQ L
IOBR API 02 RQ L
IOBR API 03 RQ L
PL47 RQ SYNC 04 L
PL47 RQ SYNC 05 L
PL47 RQ SYNC 06 L
PL47 RQ SYNC 07 L
PL03 PL 03 EN L
TRO DIS BRK (1) H
APIC API RQ L
APIC API SYNC H
APIC API SYNC (B) L
APIC API SYNC (B) H
APIC API CAL H
PL03 PL03 EN L
APIC SET PL 04 L
APIR API ENABLE (1) H
APIC TIME 04 B H
APIC API ENABLE (1) H
APIC API SYNC (B) L
APIC SET API RQ H
APIC API STROBE H
APIC TIME 04 L
APIC API SYNC (B) L
APIC API STROBE L
APIC TIME 04 H
APIC TIME 04 B H
FIRST USED ON XM15
digital
TITLE API CONTROL
NEXT HIGHER ASSY. B-DD-M7176-0
SIZE D CODE CS NUMBER M7176-0-APIC REV. A
SCALE
SHEET 1 OF 1
ORIGINATED

+3VA

IOBR API ØØ RQ L

APIC SET API RQ H

IOBR API PWR CLR L

IOBR API Ø1 RQ L

IOBR API Ø2 RQ L

IOBR API Ø3 RQ L

APIR API Ø4 RQ (1) L

APIR API Ø5 RQ (1) L

APIR API Ø6 RQ (1) L

APIR API Ø7 RQ (1) L

APIR API Ø4 RQ (1) H

IOBR I/O BØG H

PLØ3 RQ SYNC Ø1 L

PLØ3 RQ SYNC Ø2 L

PLØ3 RQ SYNC Ø3 L

APIR RQ SYNC Ø1 H

APIR RQ SYNC Ø2 H

APIR RQ SYNC Ø3 H

PLØ3 API PWR CLR H

APIC ISA H

APIR RQ SYNC ØØ H

PLØ3 RQ SYNC ØØ L

PLØ3 API PWR CLR H

APIC API SYNC (B) H

APIC API STROBE L

PL47 RQ SYNC Ø4 L

APIC API SYNC (B) L

APIR TIME Ø3 H

ES2

IOBR I/O BØ7 H

APIR API Ø5 RQ (1) H

IOBR I/O BØ8 H

APIR API Ø6 RQ (1) H

IOBR I/O BØ9 H

APIR API Ø7 RQ (1) H

IOBR I/O B Ø6 H

APIC ISA H

IOBR API PWR CLR L

PL47 RQ SYNC Ø5 L

PL47 RQ SYNC Ø6 L

PL47 RQ SYNC Ø7 L

REVISIONS	REV.	CHANGE NO.	ORIGINATED	CHK
	A		X	

DRN. E. Wilson	5/12/75	FIRST USED ON XM15
CHK.		TITLE API REQ'S
ENG.	7-19-75	
PROJ. ENG.	9-9-75	
PROD.	9-20-75	
NEXT HIGHER ASSY. B-DD-M7176-Ø		SIZE D CODE CS NUMBER M7176-Ø-APIR REV. A
SCALE		
SHEET 1 OF 1		DIST.

digital

APIR RQ ØØ (1) H
PLØ3 RQ SYNC ØØ L
APIR RQ Ø1 (1) H
PLØ3 RQ SYNC Ø1 L
APIR RQ Ø2 (1) H
PLØ3 RQ SYNC Ø2 L
APIR RQ Ø3 (1) H
PLØ3 RQ SYNC Ø3 L
PLØ3 PL ØØ EN H
PLØ3 PL Ø1 EN H
PLØ3 PL Ø2 EN H
PLØ3 PL Ø3 EN H
PLØ3 PL ØØ EN L
PLØ3 PL Ø1 EN L
PLØ3 PL Ø2 EN L
PLØ3 PL Ø3 EN L
PLØ3 DBR V DBK B H
PLØ3 DBR V DBK H
PLØ3 DBK H
PLØ3 DBR H
PLØ3 PL Ø1 (1) L
PLØ3 PL ØØ EN H
PLØ3 PL Ø2 (1) L
PLØ3 PL Ø1 EN H
PLØ3 PL Ø3 (1) L
PLØ3 PL Ø2 EN H
IOBR API PWR CLR B L
PLØ3 API PWR CLR L
PLØ3 API PWR CLR H
IOBR I/O B 10 H
APIR RR ØØ (1) L
+3V
PLØ3 PL ØØ EN L
IOBR I/O B 11 L
APIR RQ Ø1 (1) L
PLØ3 PL ØØ EN H
PLØ3 PL Ø1 EN L
IOBR I/O B 12 L
APIR RQ Ø2 (1) L
PLØ3 PL Ø1 EN H
PLØ3 PL Ø2 EN L
IOBR I/Ø B 13 L
APIR RQ Ø3 (1) L
PLØ3 PL Ø2 EN H
PLØ3 PI SYNC H
APIR API STROBE L
TRØ ISA B H

DRN	E Wilson	5/13/75
CHK		5/20/75
ENG		9-11-75
PROJ. ENG		9/11/75
PROD		9/22/75
NEXT HIGHER ASSY.	B-DD-M7176-Ø	
SCALE		
SHEET	1 OF 1	

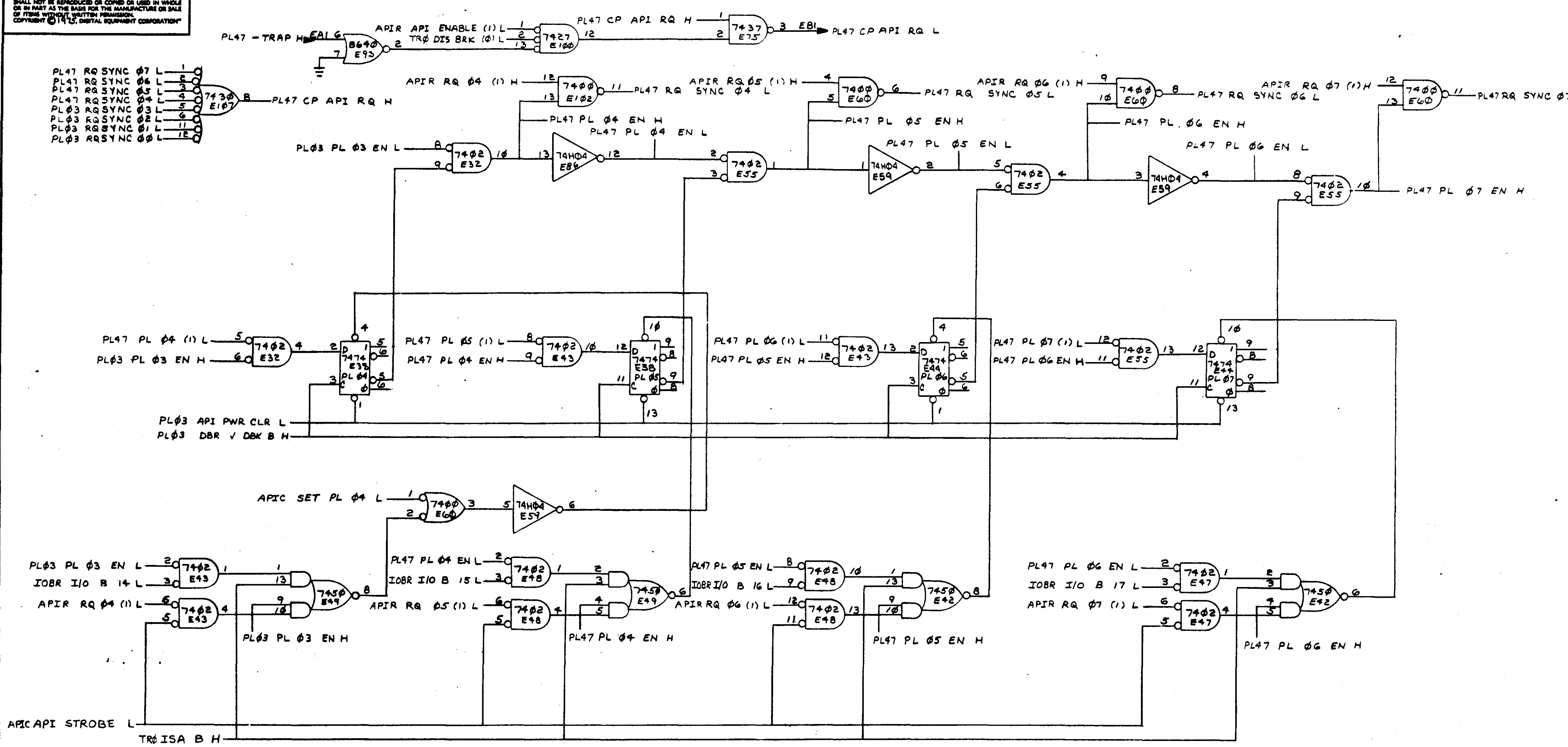
FIRST USED ON: XM15 — digital

TITLE: PRIORITY LEVELS Ø-3

SIZE	CODE	NUMBER	REV.
D	CS	M7176-Ø-PLØ3	A

DIST.

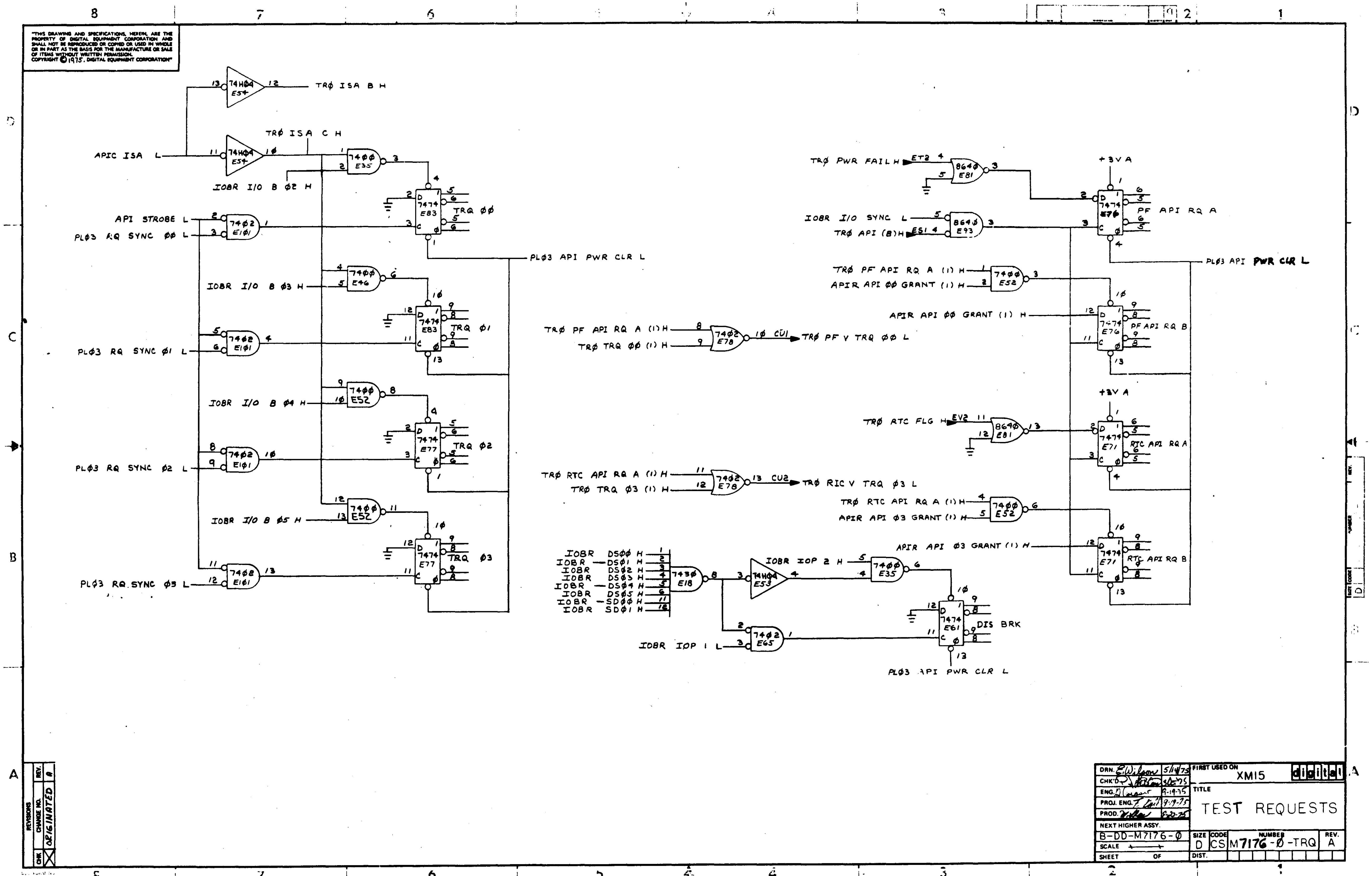
REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINATED	A



REV.	CHANGE NO.	REVISIONS
A	ORIGINATED	

DRN.	E Wilson 5/13/75
FIRST USED ON	XM15
TITLE	PRIORITY LEVELS 4-7
NEXT HIGHER ASSY.	B-DD-M7176-0
SIZE	D
CODE	CS
NUMBER	M7176-Ø-PL47
REV.	A
SHEET	1 OF 1

digital



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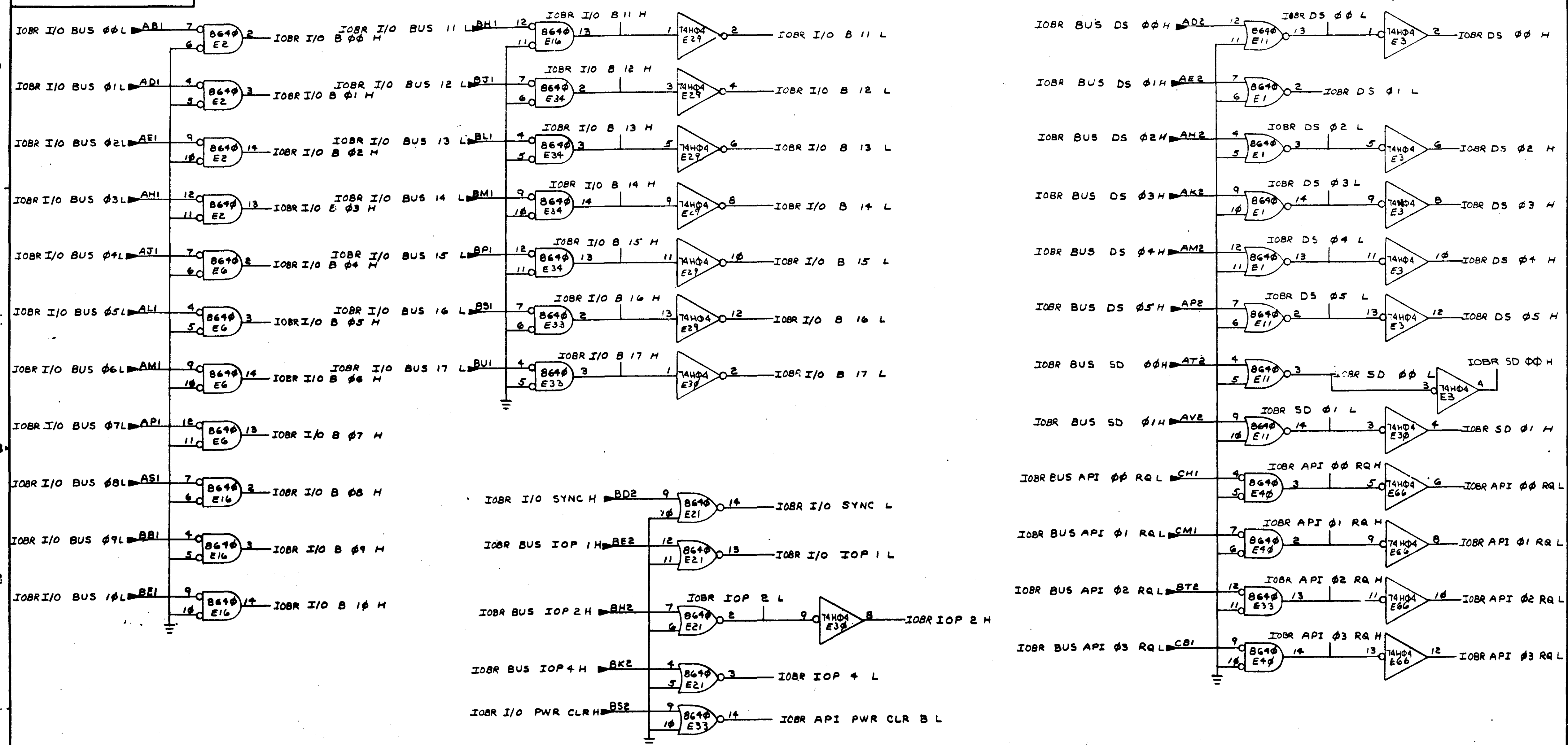
TRØ ISA B H
TRØ ISA C H
APIC ISA L
IOBR I/O B Ø2 H
API STROBE L
PLØ3 RQ SYNC ØØ L
TRQ ØØ
PLØ3 API PWR CLR L
IOBR I/O B Ø3 H
PLØ3 RQ SYNC Ø1 L
TRQ Ø1
IOBR I/O B Ø4 H
PLØ3 RQ SYNC Ø2 L
TRQ Ø2
IOBR I/O B Ø5 H
PLØ3 RQ SYNC Ø3 L
TRQ Ø3
TRØ PF API RQ A (1) H
TRØ TRQ ØØ (1) H
TRØ PF V TRQ ØØ L
TRØ RTC API RQ A (1) H
TRØ TRQ Ø3 (1) H
TRØ RTC V TRQ Ø3 L
IOBR DSØØ H
IOBR DSØ1 H
IOBR DSØ2 H
IOBR DSØ3 H
IOBR DSØ4 H
IOBR DSØ5 H
IOBR SDØØ H
IOBR SDØ1 H
IOBR IOP 2 H
IOBR IOP 1 L
DIS BRK
PLØ3 API PWR CLR L
TRØ PWR FAIL H
+3V A
PF API RQ A
IOBR I/O SYNC L
TRØ API (B) H
PLØ3 API PWR CLR L
TRØ PF API RQ A (1) H
APIR API ØØ GRANT (1) H
PF API RQ B
TRØ RTC FLG H
RTC API RQ A
TRØ RTC API RQ A (1) H
APIR API Ø3 GRANT (1) H
RTC API RQ B
DRN. E. Wilson
CHK'D
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY.
B-DD-M7176-Ø
SCALE
SHEET OF
FIRST USED ON XM15
digital
TITLE TEST REQUESTS
SIZE D CODE CS NUMBER M7176-Ø-TRQ REV. A
DIST.
REVISIONS
CHANGE NO. ORIGINATED
REV. Ø


IOBR I/O BUS Ø0 L
IOBR I/O B Ø0 H
IOBR I/O BUS Ø1 L
IOBR I/O B Ø1 H
IOBR I/O BUS Ø2 L
IOBR I/O B Ø2 H
IOBR I/O BUS Ø3 L
IOBR I/O B Ø3 H
IOBR I/O BUS Ø4 L
IOBR I/O B Ø4 H
IOBR I/O BUS Ø5 L
IOBR I/O B Ø5 H
IOBR I/O BUS Ø6 L
IOBR I/O B Ø6 H
IOBR I/O BUS Ø7 L
IOBR I/O B Ø7 H
IOBR I/O BUS Ø8 L
IOBR I/O B Ø8 H
IOBR I/O BUS Ø9 L
IOBR I/O B Ø9 H
IOBR I/O BUS 1Ø L
IOBR I/O B 1Ø H
IOBR I/O BUS 11 L
IOBR I/O B 11 H
IOBR I/O B 11 L
IOBR I/O BUS 12 L
IOBR I/O B 12 H
IOBR I/O B 12 L
IOBR I/O BUS 13 L
IOBR I/O B 13 H
IOBR I/O B 13 L
IOBR I/O BUS 14 L
IOBR I/O B 14 H
IOBR I/O B 14 L
IOBR I/O BUS 15 L
IOBR I/O B 15 H
IOBR I/O B 15 L
IOBR I/O BUS 16 L
IOBR I/O B 16 H
IOBR I/O B 16 L
IOBR I/O BUS 17 L
IOBR I/O B 17 H
IOBR I/O B 17 L
IOBR I/O SYNC H
IOBR I/O SYNC L
IOBR BUS IOP 1 H
IOBR I/O IOP 1 L
IOBR BUS IOP 2 H
IOBR IOP 2 L
IOBR IOP 2 H
IOBR BUS IOP 4 H
IOBR IOP 4 L
IOBR I/O PWR CLR H
IOBR API PWR CLR B L
IOBR BUS DS ØØ H
IOBR DS ØØ L
IOBR DS ØØ H
IOBR BUS DS Ø1 H
IOBR DS Ø1 L
IOBR BUS DS Ø2 H
IOBR DS Ø2 L
IOBR DS Ø2 H
IOBR BUS DS Ø3 H
IOBR DS Ø3 L
IOBR DS Ø3 H
IOBR BUS DS Ø4 H
IOBR DS Ø4 L
IOBR DS Ø4 H
IOBR BUS DS Ø5 H
IOBR DS Ø5 L
IOBR DS Ø5 H
IOBR BUS SD ØØ H
IOBR SD ØØ L
IOBR SD ØØ H
IOBR BUS SD Ø1 H
IOBR SD Ø1 L
IOBR SD Ø1 H
IOBR BUS API ØØ RQ L
IOBR API ØØ RQ H
IOBR API ØØ RQ L
IOBR BUS API Ø1 RQ L
IOBR API Ø1 RQ H
IOBR API Ø1 RQ L
IOBR BUS API Ø2 RQ L
IOBR API Ø2 RQ H
IOBR API Ø2 RQ L
IOBR BUS API Ø3 RQ L
IOBR API Ø3 RQ H
IOBR API Ø3 RQ L
8640
74HØ4

REVISIONS		
CHK.	CHANGE NO.	REV.
	ORIGINATED	A

DRN. E. Wilson 5/6/75	FIRST USED ON XM15
CHK'D	
ENG. 9-19-75	TITLE I/O BUS RECV
PROJ. ENG. 9-11-75	
PROD.	
NEXT HIGHER ASSY. B-DD-M7176-Ø	SIZE D · CODE CS · NUMBER M7176-Ø-IOBR · REV. A
SCALE	
SHEET 1 OF 1	DIST.

digital

IOA API I/O A 12 L → 8097 E51 → CM2 → BAPI I/O ADDR 12 L

IOA API I/O A 13 L → 8097 E51 → CP2 → BAPI I/O ADDR 13 L

IOA API I/O A 14 L → 8097 E51 → CR2 → BAPI I/O ADDR 14 L

IOA API I/O A 15 L → 8097 E51 → CS2 → BAPI I/O ADDR 15 L

IOA API I/O A 16 L → 8097 E51 → CT2 → BAPI I/O ADDR 16 L

IOA API I/O A 17 L → 8097 E51 → CV2 → BAPI I/O ADDR 17 L

TRØ TRQ Ø1 (1) L → 8097 E45 → CF2 → BAPI TRQ Ø1 L

TRØ TRQ Ø2 (1) L → 8097 E45 → CH2 → BAPI TRQ Ø2 L

TRØ PF API RQ A (Ø) L → 8097 E45 → CL1 → BAPI API ØØ ENL

CLKM RPL + RD CLK L → 7404 E53

2 → 8097 E39 → BP2 → BAPI KA RD RQ H

4 → 8097 E39 → BV2 → BAPI KA RD ENB H

RTC API RQ A (Ø) H → 8097 E39 → CE1 → BAPI API Ø3 EN H

APIR API ØØ GRANT (1) H → 8097 E45 → CJ1 → BAPI API ØØ GR H

APIR API Ø1 GRANT (1) H → 8097 E45 → CP1 → BAPI API Ø1 GR H

APIR API Ø2 GRANT (1) H → 8097 E39 → CD2 → BAPI API Ø2 GR H

APIR API Ø3 GRANT (1) H → 8097 E39 → CD1 → BAPI API Ø3 GR H

TRØ PF API RQ A (1) L → 8097 E39 → CE2 → BAPI PWR FAIL API RQ L

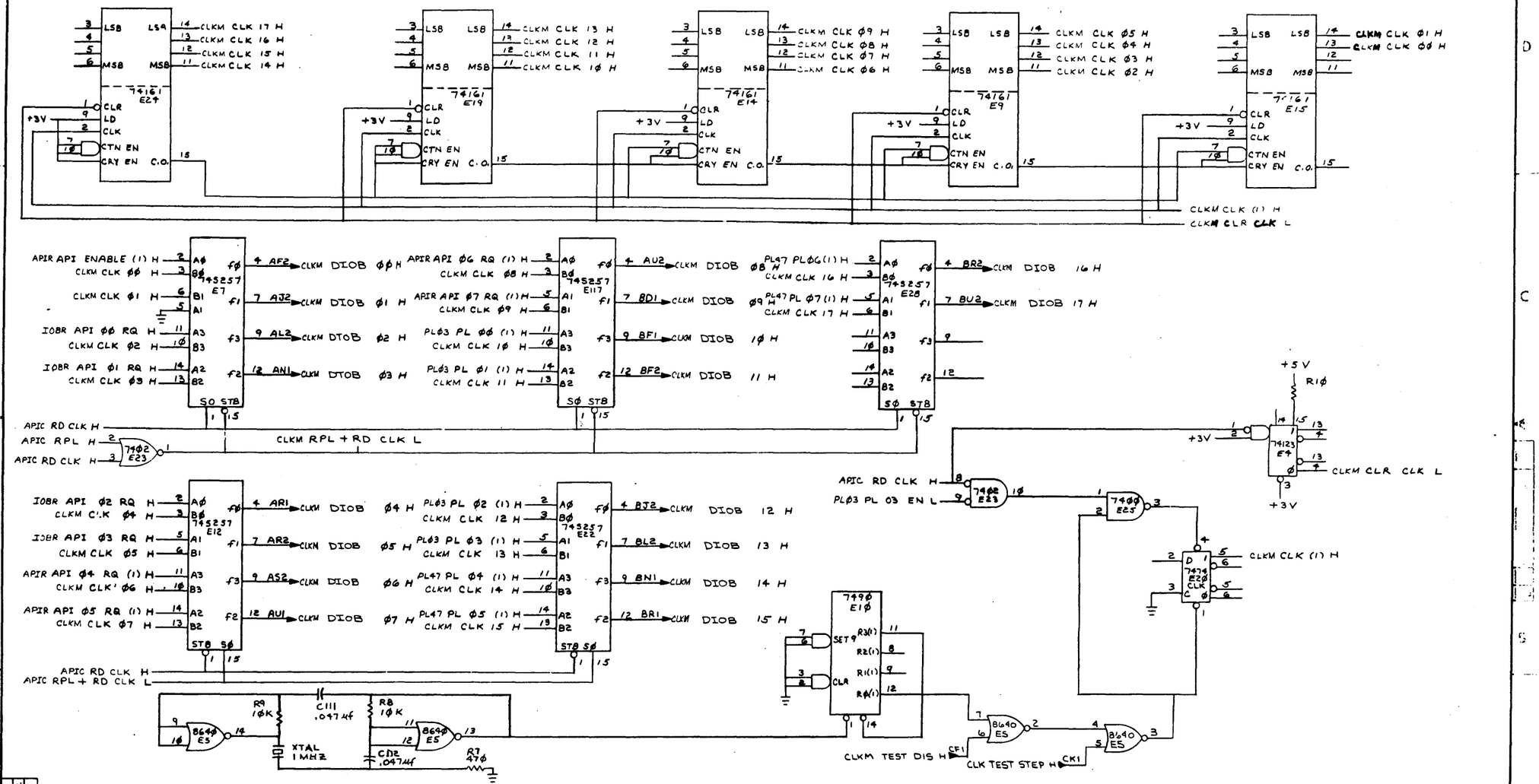
TRØ RTC API RQ A (1) H → 8097 E45 → CN1 → BAPI CLK API RQ H

APIC API SYNC (B) H → 74H04 E53 → CS1 → BAPI API ADD ENB L

APIC API SKIP REQUEST L → 75453 E27 → BM2 → BAPI SKP RQ L

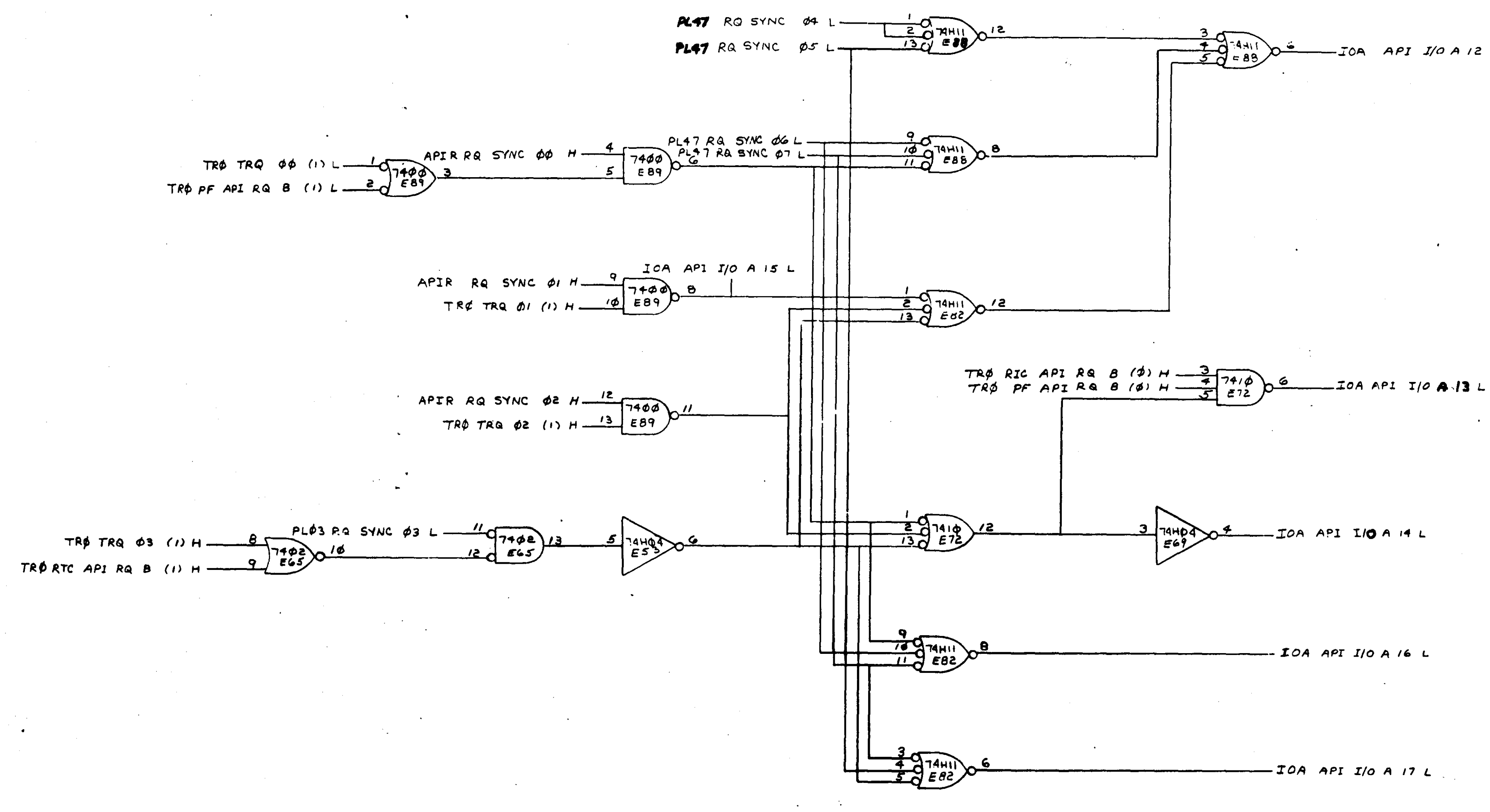
REVISIONS		
CHK	CHANGE NO.	REV.
	ORIGINATED	A

DRN. E Wilson	5/14/75	FIRST USED ON XM15
CHK'D		TITLE BUFFERED API CONTROL
ENG.	11-19-75	
PROJ. ENG.	11-19-75	
PROD.		
NEXT HIGHER ASSY.	B-DD-M7176-Ø	
SCALE		SIZE D / CODE CS / NUMBER M7176-Ø-BAPI / REV. A
SHEET 1 OF 1		DIST.



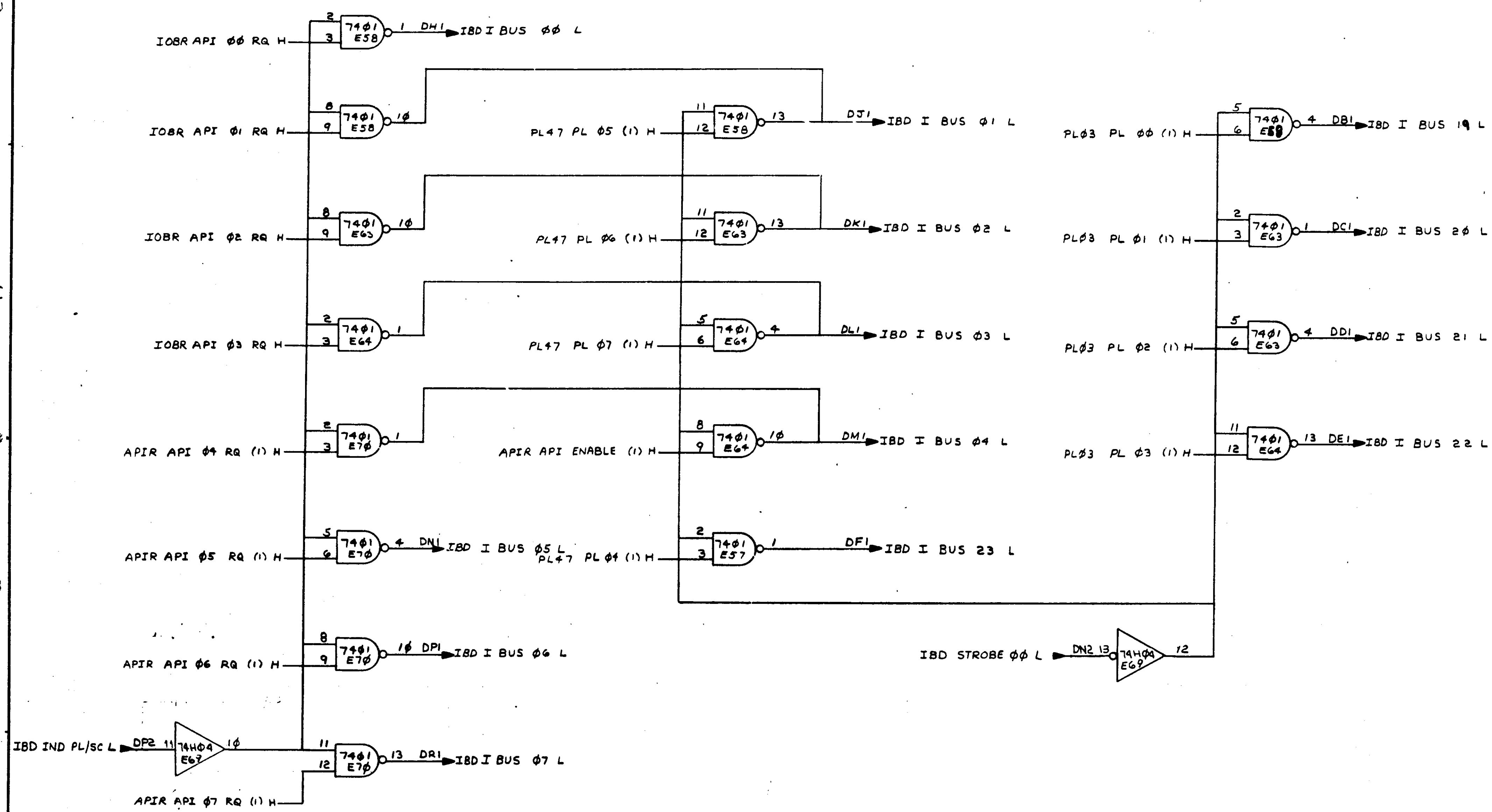
DRN	J. Wilson	5/8/75	FIRST USED ON XM15
CHK'D			digital
ENG.		11-11-75	TITLE
PROJ. ENG.		9-12-75	CLK AND I/O MUX
PROD.		9-28-75	
NEXT HIGHER ASSY.			
B-DD-M7176-Ø			SIZE D CODE CS NUMBER M7176 Ø-CLKM REV. A
SCALE			
SHEET 1 OF 1			DIST.

REVISIONS: REV. A — CHANGE NO. ORIGINATED — CHK X



DRN. E. Wilson 5/15/75	FIRST USED ON XM15	digital	
CHK'D	TITLE		
ENG.	I/O ADDRESS		
PROJ. ENG.			
PROD.			
NEXT HIGHER ASSY. B-DD-M7176-Ø	SIZE D	CODE CS	NUMBER M7176-Ø-IOA	REV. A
SCALE	DIST.		
SHEET 1 OF 1			

CHK	CHANGE NO.	REV.
	ORIGINATED	A



REVISIONS	CHANGE NO.	REV.
	ORIGINATED	A

DRN. F. Wilson	5/15/75	FIRST USED ON XM15
CHK'D		digital
ENG.	1-9-75	TITLE
PROJ. ENG.	9-12-75	I BUS DRIVERS
PROD.		
NEXT HIGHER ASSY. B-DD-M7176-Ø		
SCALE		SIZE D CODE CS NUMBER M7176-Ø-IBD REV. A
SHEET 1 OF 1		DIST.

NOTES:

1. FOR DRAWING DIRECTORY REFER TO: B-DD-M5921-Ø
2. UNLESS OTHERWISE SPECIFIED THE FOLLOWING PIN NUMBERS APPLY:

PACKAGE TYPE	GND	+5V
16 PIN DIP	8	16
14 PIN DIP	7	14
864Ø	1	8

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011763	1
3	E1, E3, E9	IC 75453	1911036	2
2	E4, E8	IC 8640	1911469	3
1	E6	IC 74HØ4	1909931	4
1	E5	IC 7402	1909004	5
3	E2, E7, E1Ø	IC 74H5Ø	1909060	6
10	C1 THRU C1Ø	CAP .01uf 100V	1001610-01	7
1	C11	CAP 6.8uf 35V 10%	1005806	8
1		HANDLE, FLIP CHIP MAGENTA	9008337-06	9
2		EYELET	9006752	10

PARTS LIST

IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL: XM15

ETCH BOARD REV.

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV. | CHANGE NO. | REVISIONS | CHK

DRN. K. Lamrche DATE 6/9/75
CHK'D DATE
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

NEXT HIGHER ASSY: B-DD-M5921-Ø

digital

TITLE: BUS XCVR

SIZE: D | CODE: UA | NUMBER: M5921-Ø-Ø | REV.

SCALE NONE

SHEET 1 OF 3

DIST.

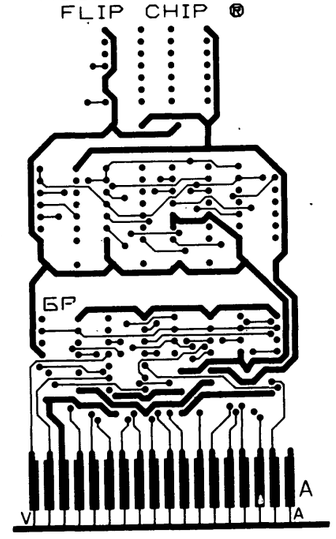
REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
BUS XCVR	D	UA	M5921-Ø-Ø	
SCALE 2/1 SHEET 2 OF 3	DIST			

[redacted]

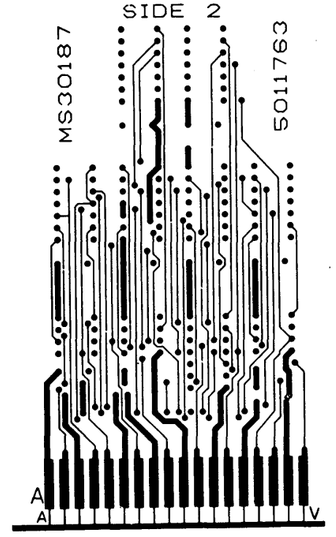
MS30187 5011763

M5921A SIDE 1
FLIP CHIP ®



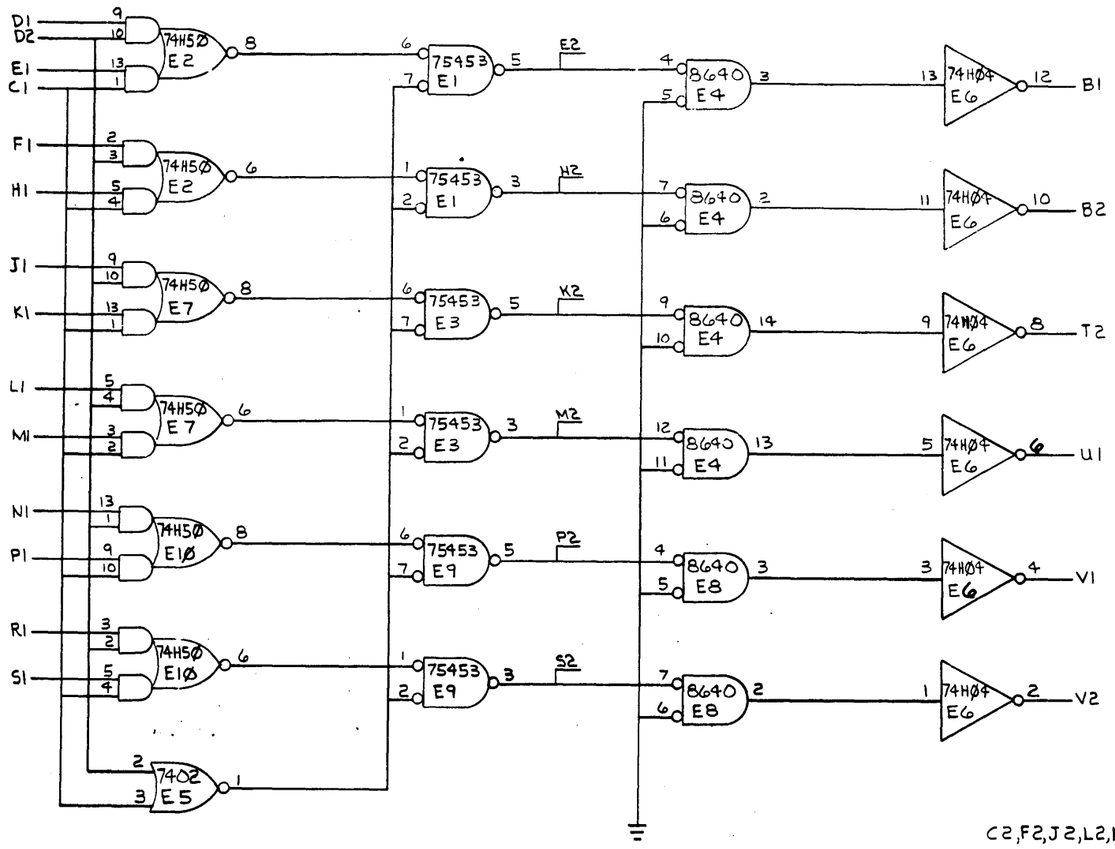
[redacted]

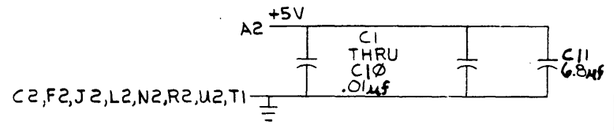
M5921A BUS XCVR
SIDE 2



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE	CODE	NUMBER	REV.
BUS XCVR	D	UA	M5921-Ø-Ø	
SCALE 2/1 SHEET 3 OF 3	DIST			





FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
XM15		PARTS LIST		

DIMENSIONAL TOLERANCE				
DIMENSIONS ARE MILLIMETERS / INCHES UNLESS OTHERWISE SPECIFIED				
MILLIMETERS	INCHES	ANGLES	DRN. K. Lamache	DATE 6/10/75
X,XX = ±0,10	.XXX = ±.005	±0° 30'	CHK'D.	DATE
X,X = ±0,5	.XX = ±.02		ENG.	DATE
X = ±2,	.X = ±.1		PROJ ENG.	DATE
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓		PROD.	DATE 10-2 75
	MATERIAL		NEXT HIGHER ASSY.	
	FINISH		B-DD-M5921-0	
			SCALE	
			SHEET 1 OF 1	

digital

TITLE
BUS
XCVR

SIZE	CODE	NUMBER	REV.
C	CS	M5921-0-1	

DIST.

REVISIONS	CHANGE NO.	REV.
		CHK

NOTES:

1. FOR DRAWING DIRECTORY, REFER TO B-DD-GB27Ø-Ø
2. UNLESS OTHERWISE SPECIFIED THE FOLLOWING PIN NUNBERS APPLY:

PACKAGE TYPE	+5V	GND
16 PIN DIP	16	8
14 PIN DIP.	14	7
8690	8	1

WIRE ADDS SIDE #1 AS SHOWN

1. ADD WIRE FROM E3(14) TO CONNECTOR FINGER AD1

IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE		

IC PIN LOCATIONS

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
1		ETCHED CIRCUIT BOARD	5011790	1
7	C1 THRU C7	CAP. .01mf 100V 20%	1001610-01	2
1	C9	CAP. 2.2mf 35V 10%	1002431	3
1	C10	CAP. 10mf 20V 10%	1004813	4
1	C8	CAP. 6.8mf 35V 10%	1005306	5
1	C11	CAP. .47mf 35V 10%	1005955	6
2	D1,D2	DIODE D664	1100114	7
1	J1	CONN. MATE-N-LOK 8 SKT HSG	1209340-00	8
8		CONTACT, SKT	1209456-01	9
1	R4	RES. 220 5% ¼W	1300271	10
3	R3,R6,R10	RES. 330 5% ¼W	1300295	11
1	R5	RES. 1K 5% ¼W	1300365	12
1	R7	RES. 12K 5% ¼W	1300488	13
1	R11	RES. 750 5% ¼W	1301401	14
1	R8	RES. 180K 5% ¼W	1302397	15
1	R9	RES. 100K 5% ¼W	1302466	16
1	R2	RES. 1.21K 1% ¼W	1302871	17
1	R1	RES. 1K 1% ¼W	1303114	18
1	Q1	TRANS. DEC 3@@9B	1503100	19
1	Q2	TRANS. DEC 6534C	1503409-02	20
1	E6	I.C. DEC 7401	1905590	21
1	E1	I.C. DEC 74H@@	1909056	22
1	E2	I.C. DEC 74H1@	1909057	23
1	E4	I.C. DEC 74H72	1909069	24
1	E5	I.C. DEC 709	1909344	25
1	E3	I.C. DEC 8640	1911469	26
2		EYELET	9006732	27

PARTS LIST

FIRST USED ON OPTION MODEL: XVIØØ

ETCH BOARD REV.

ORIGINATED			
CHANGE NO.			
REVISIONS			
CHK			
DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN	DATE 6-27-75
DSN	DATE 6-30-75
ENG.	DATE 7-1-75
PROJ ENG.	DATE 7-1-75
PROD.	DATE 8-5-75
NEXT HIGHER ASSY	B-DD-GB27Ø-Ø
SCALE	2/1
SHEET	1 OF 5

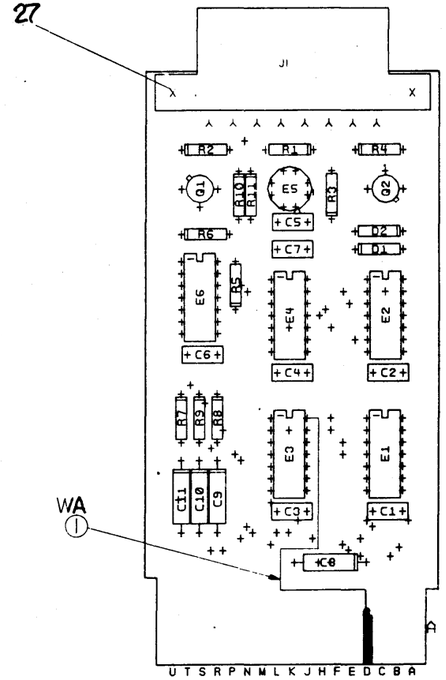
digital

TITLE: LOW VOLT DETECTOR

SIZE	CODE	NUMBER	REV.
D	UA	GB27Ø-Ø-Ø	

DIST.

COMPONENT SIDE VIEW



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN.	
CHK'D.	
ENG.	
PROJ. ENG.	
PROD.	

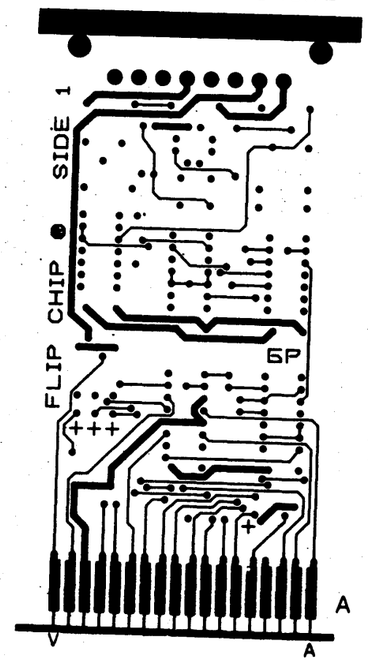
digital

TITLE: L.V. DETECT

SCALE	SIZE	CODE	NUMBER	REV
2 TO 1	D	UA	G8270-0-0	
SHT. 2 OF 5				

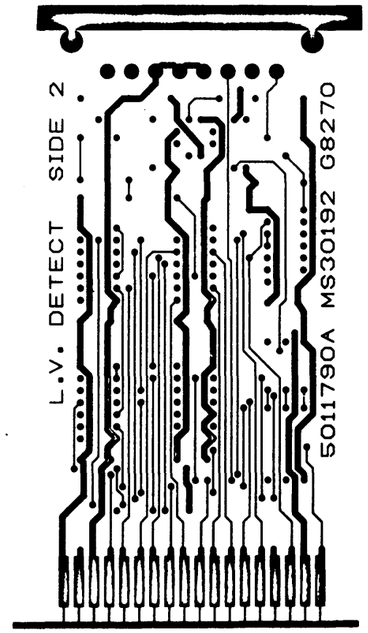
ETCH REV A FIRST USED ON XVIDX

G8270
5011790A MS30192



REVISIONS		
CHK	CHANGE NO.	REV

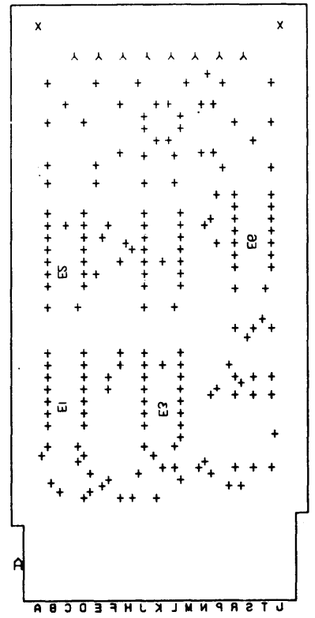
TITLE	SIZE	CODE	NUMBER	REV.
LOW VOLT DETECTOR	D	UA	G8270-0-0	
SCALE 2 TO 1 SHEET 3 OF 5	DIST.			



REVISIONS		
CHK	CHANGE NO.	REV

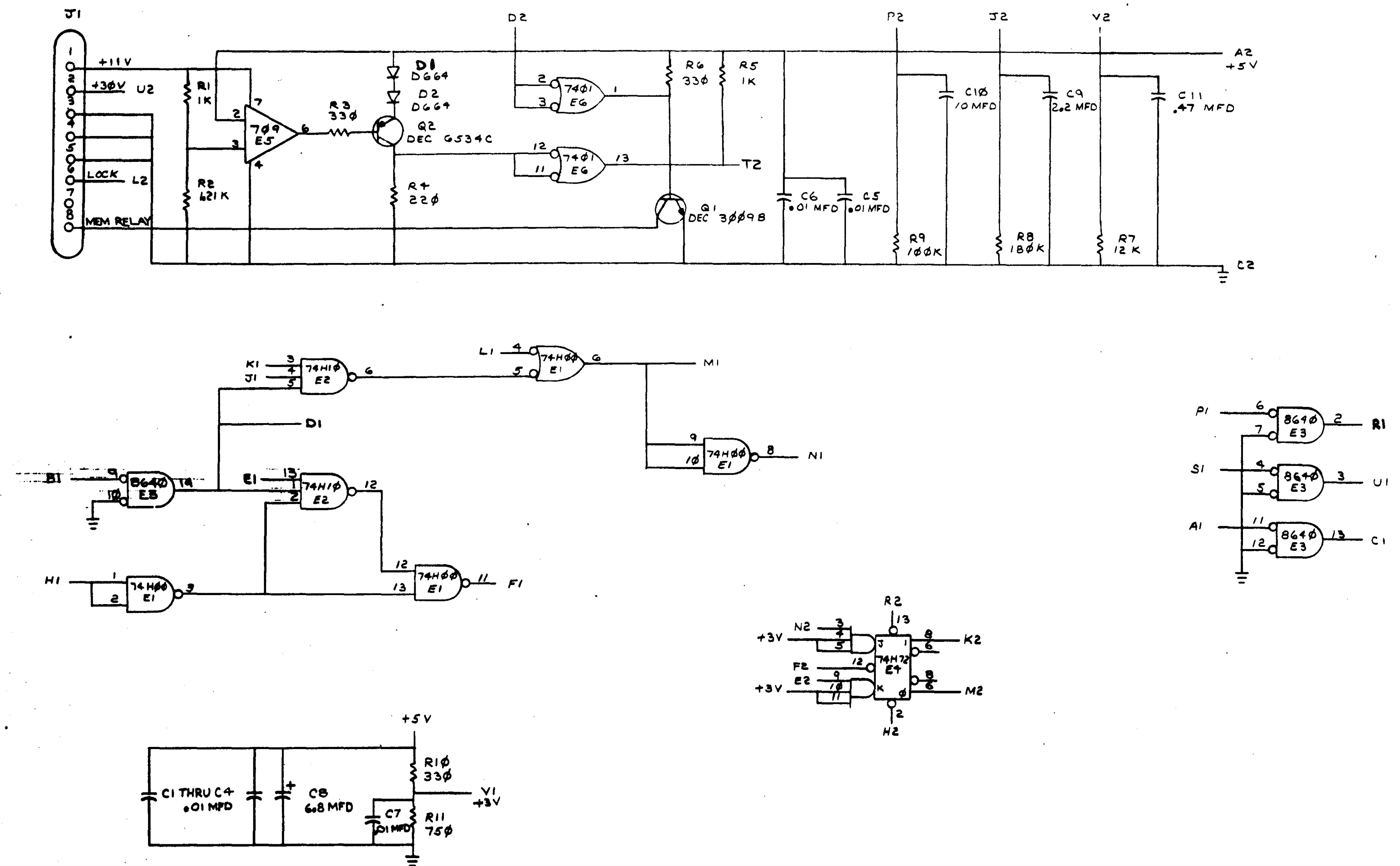
TITLE: LOW VOLT DETECTOR		SIZE: D	CODE: UA	NUMBER: G8270 - 0 - 0
SCALE: 2 TO 1	SHEET 4 OF 5	DIST.		REV.

SIDE 2



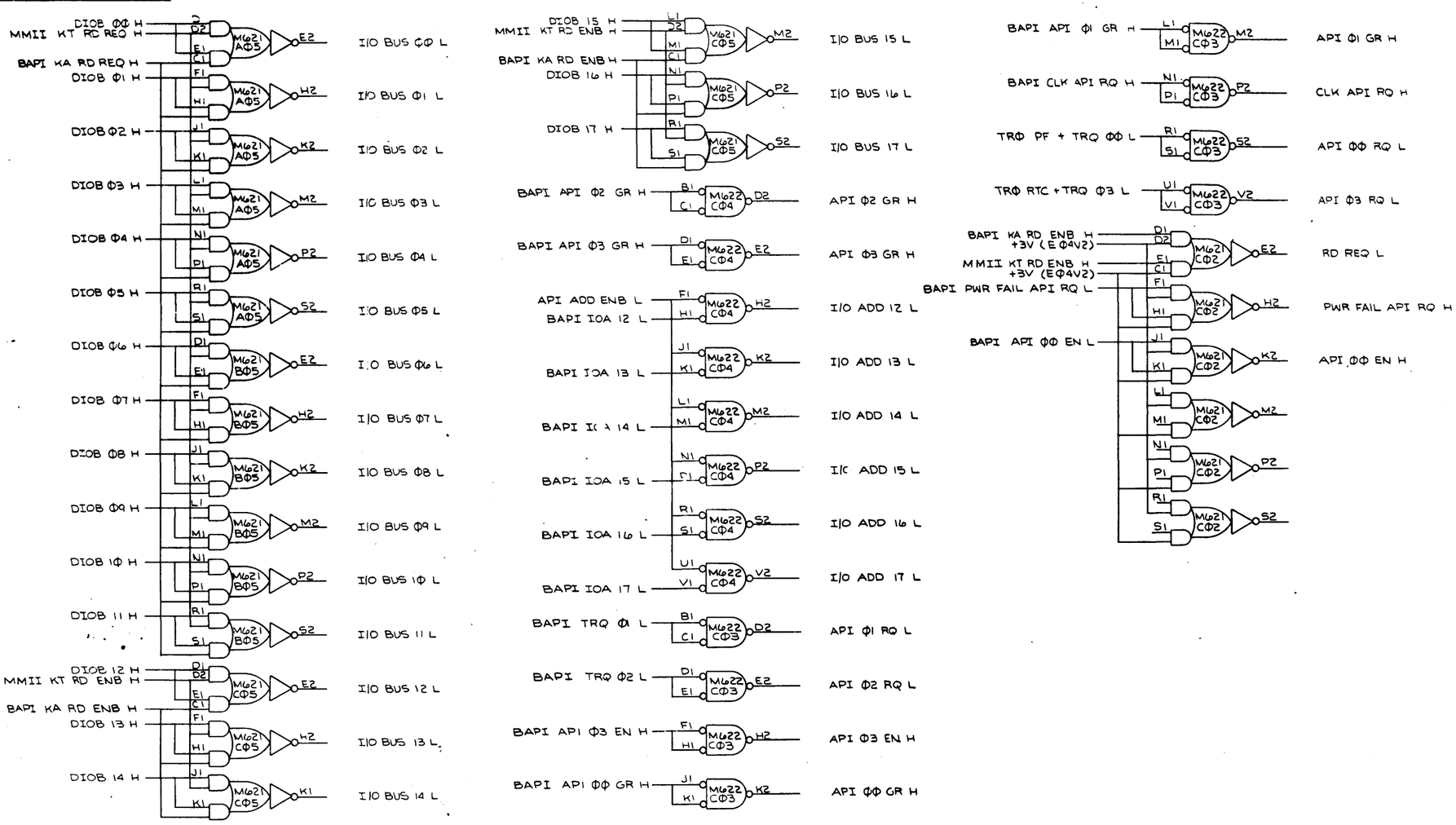
REVISIONS		
CHK	CHANGE NO.	REV

TITLE: LOW VOLT DETECTOR
SCALE 2 TO 1 SHEET 5 OF 5
SIZE D CODE UA NUMBER G8270-0-0 REV.
DIST.



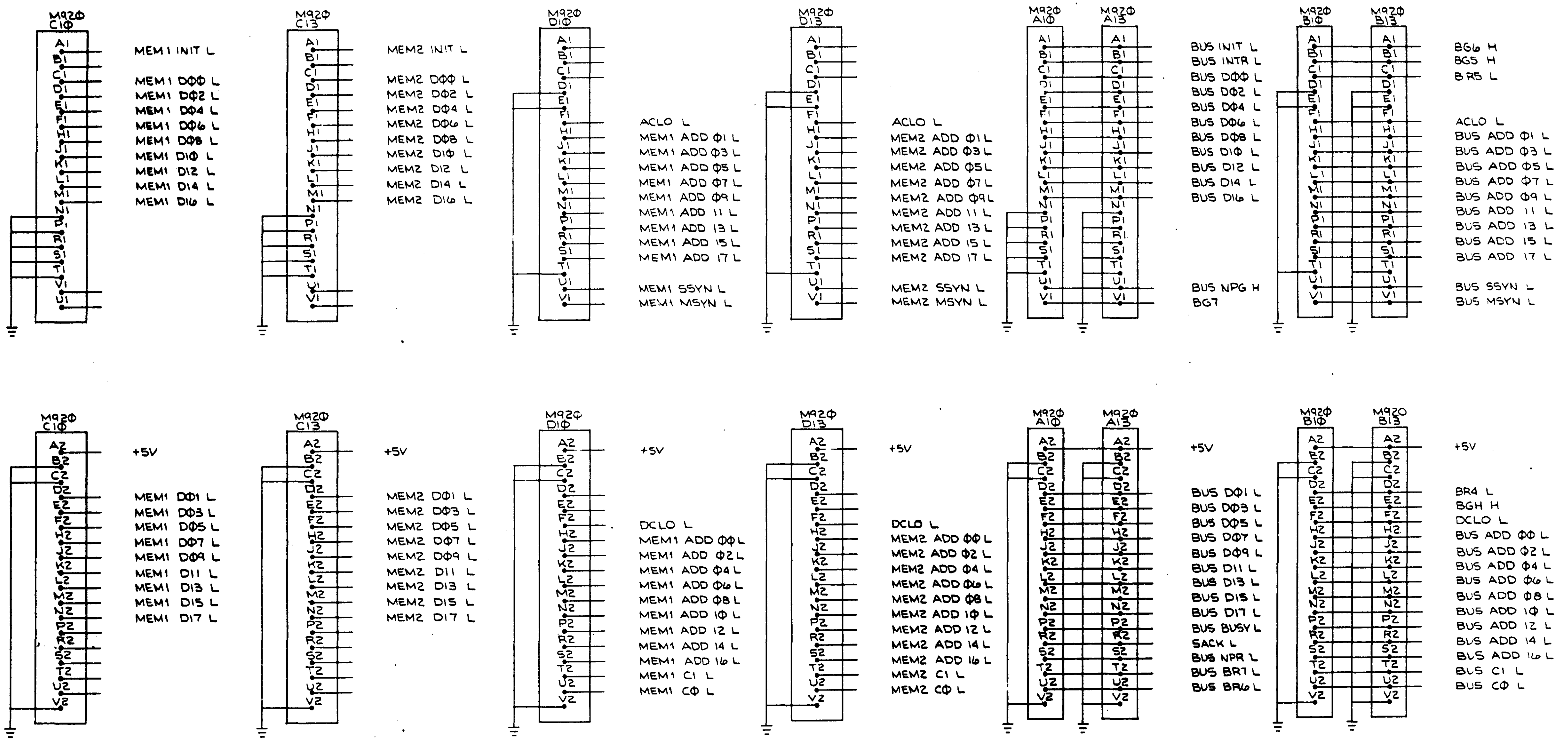
FIRST USED ON	XV100
TITLE	LOW VOLT DETECTOR
NEXT HIGHER ASSY.	B-DD-G8270-0
SIZE	D
CODE	CS
NUMBER	G8270-0-1
SHEET	1 OF 1

digital



REVISIONS	REV.	CHANGE NO.	CHK

DRN R W Counter	7-23-75	FIRST USED ON	XM15
CHK D [illegible]	[illegible]	TITLE	XM15 IOB & API DRIVERS
ENG [illegible]	[illegible]		
PROJ. ENG.			
PROD [illegible]			
NEXT HIGHER ASSY.			
H-10-XM15-0		SIZE	CODE / NUMBER / REV.
SCALE		D	85 / XM15-0-DRIV /
SHEET 1 OF 1		DIST.	

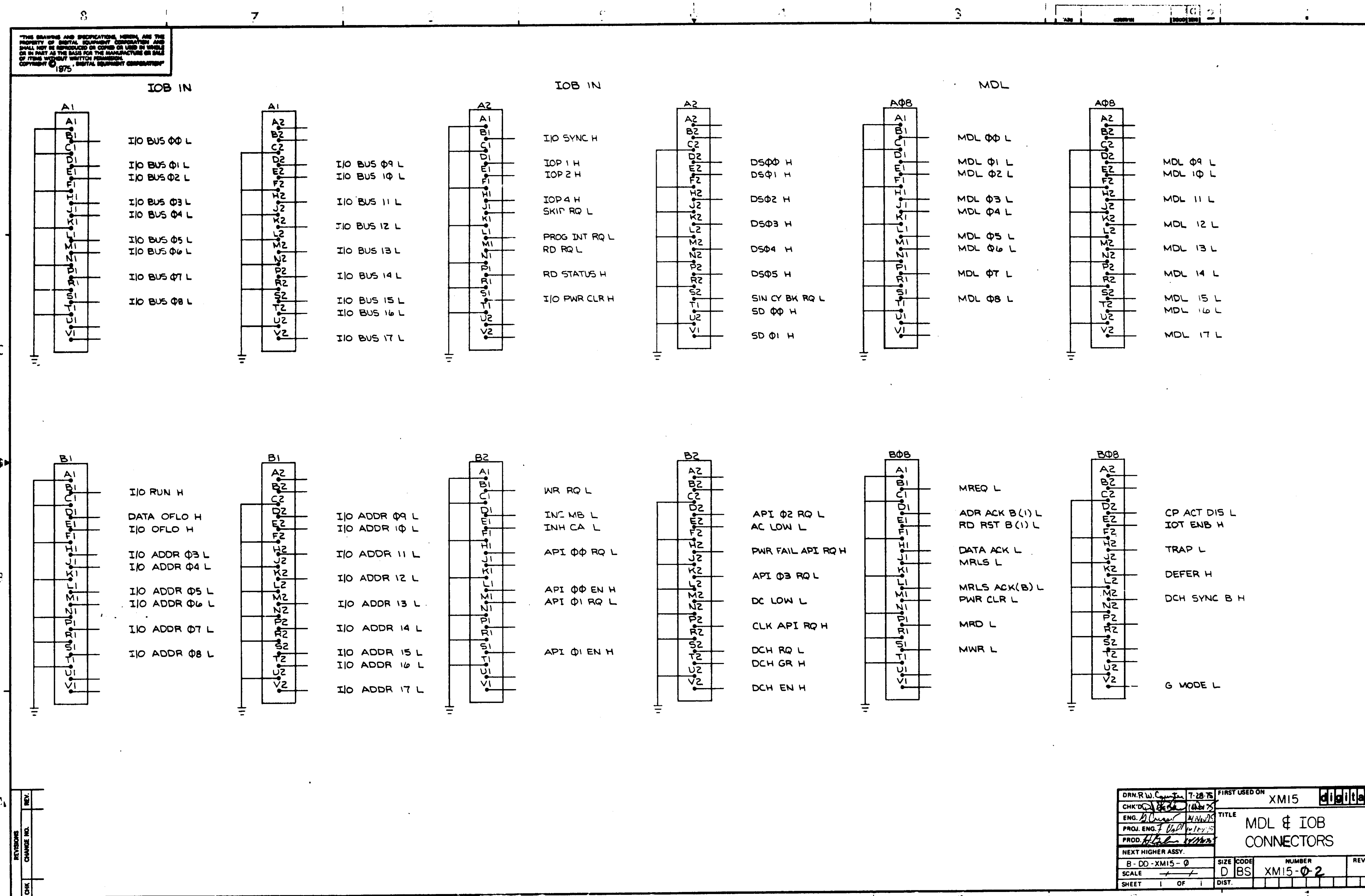


NOTES:
1. MEM1 RELATES TO THE M7173 IN SLOT 9.
2. MEM2 RELATES TO THE M7173 IN SLOT 12.
3. BUS DCLO-L WILL BE GROUNDED IF NO EXIT PROC IS CONNECTED

DRN. R.W. Counter	7-25-75
FIRST USED ON	XM15
TITLE	XM15 BUS 1&2 AND EXT PROCESSOR CONN
NEXT HIGHER ASSY.	B-DD-XM15-Φ
SIZE	D
CODE	BS
NUMBER	XM15-Φ-1
REV.	A
SHEET	1 OF 1

digital

REVISIONS — CHANGE NO. XM15-00001 — REV. A — F DOLL



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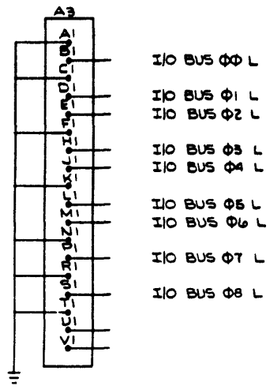
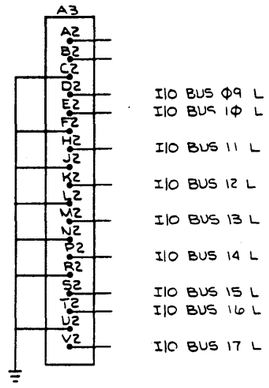
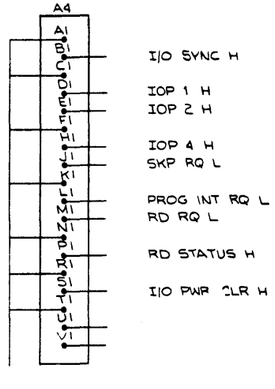
IOB IN
IOB IN
MDL
A1
I/O BUS ΦΦ L
I/O BUS Φ1 L
I/O BUS Φ2 L
I/O BUS Φ3 L
I/O BUS Φ4 L
I/O BUS Φ5 L
I/O BUS Φ6 L
I/O BUS Φ7 L
I/O BUS Φ8 L
A1
I/O BUS Φ9 L
I/O BUS 1Φ L
I/O BUS 11 L
I/O BUS 12 L
I/O BUS 13 L
I/O BUS 14 L
I/O BUS 15 L
I/O BUS 16 L
I/O BUS 17 L
A2
I/O SYNC H
IOP 1 H
IOP 2 H
IOP 4 H
SKIP RQ L
PROG INT RQ L
RD RQ L
RD STATUS H
I/O PWR CLR H
A2
DSΦΦ H
DSΦ1 H
DSΦ2 H
DSΦ3 H
DSΦ4 H
DSΦ5 H
SIN CY BK RQ L
SD ΦΦ H
SD Φ1 H
AΦ8
MDL ΦΦ L
MDL Φ1 L
MDL Φ2 L
MDL Φ3 L
MDL Φ4 L
MDL Φ5 L
MDL Φ6 L
MDL Φ7 L
MDL Φ8 L
AΦ8
MDL Φ9 L
MDL 1Φ L
MDL 11 L
MDL 12 L
MDL 13 L
MDL 14 L
MDL 15 L
MDL 16 L
MDL 17 L
B1
I/O RUN H
DATA OFLO H
I/O OFLO H
I/O ADDR Φ3 L
I/O ADDR Φ4 L
I/O ADDR Φ5 L
I/O ADDR Φ6 L
I/O ADDR Φ7 L
I/O ADDR Φ8 L
B1
I/O ADDR Φ9 L
I/O ADDR 1Φ L
I/O ADDR 11 L
I/O ADDR 12 L
I/O ADDR 13 L
I/O ADDR 14 L
I/O ADDR 15 L
I/O ADDR 16 L
I/O ADDR 17 L
B2
WR RQ L
INC MB L
INH CA L
API ΦΦ RQ L
API ΦΦ EN H
API Φ1 RQ L
API Φ1 EN H
B2
API Φ2 RQ L
AC LOW L
PWR FAIL API RQ H
API Φ3 RQ L
DC LOW L
CLK API RQ H
DCH RQ L
DCH GR H
DCH EN H
BΦ8
MREQ L
ADR ACK B(1) L
RD RST B(1) L
DATA ACK L
MRLS L
MRLS ACK(B) L
PWR CLR L
MRD L
MWR L
BΦ8
CP ACT DIS L
IOT ENB H
TRAP L
DEFER H
DCH SYNC B H
G MODE L
REVISIONS
CHANGE NO.
REV.
CHK
DRN. R.W.C.
7-28-75
CHK'D
ENG.
PROJ. ENG.
PROD.
NEXT HIGHER ASSY.
B-DD-XM15-Φ
SCALE
SHEET 1 OF 1
FIRST USED ON
XM15
digital
TITLE
MDL & IOB CONNECTORS
SIZE D
CODE BS
NUMBER XM15-Φ-2
REV.
DIST.

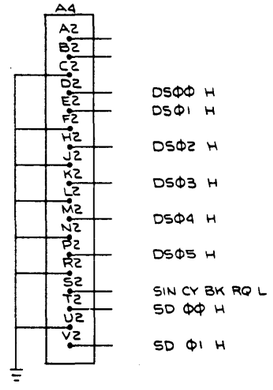
IOB OUT



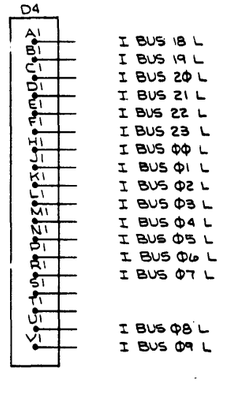


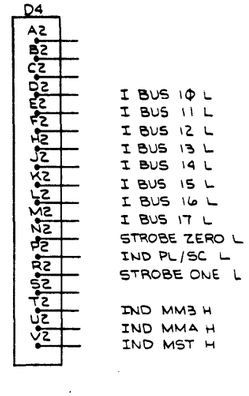
IOB OUT

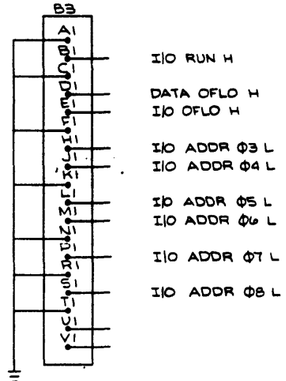


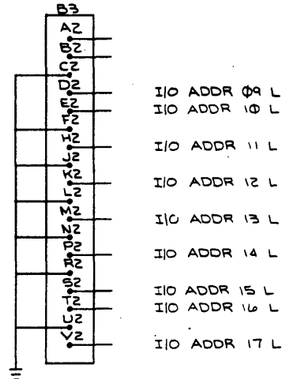


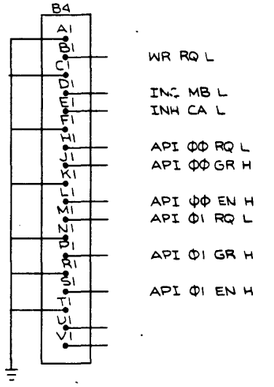
I BUS

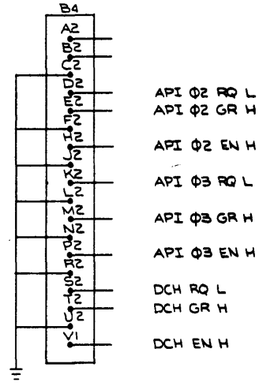






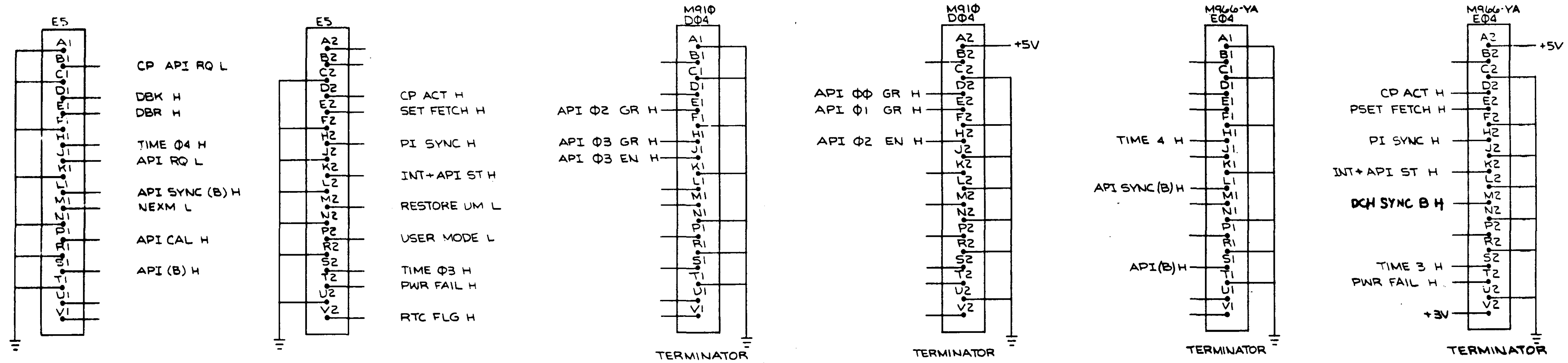






REVISIONS		
CHK.	CHANGE NO.	REV.

DRN. R W Connelly	7-28-75	FIRST USED ON XM15
CHK'D		TITLE IOB & I BUS CONNECTORS
ENG.		
PROJ. ENG.		
PROD.		
NEXT HIGHER ASSY. B-DD-XM15-Ø		SIZE D CODE BS NUMBER XM15-Ø-3 REV.
SCALE		
SHEET 1 OF 1		DIST.



REV.	CHANGE NO.	CHK
A	XM15	

DRN. R W Caunter	7-29-75
CHK'D	
ENG.	
PROJ. ENG.	
PROD.	
NEXT HIGHER ASSY.	B-DD-XM15-Ø
SCALE	
SHEET 1 OF 1	

FIRST USED ON: XM15

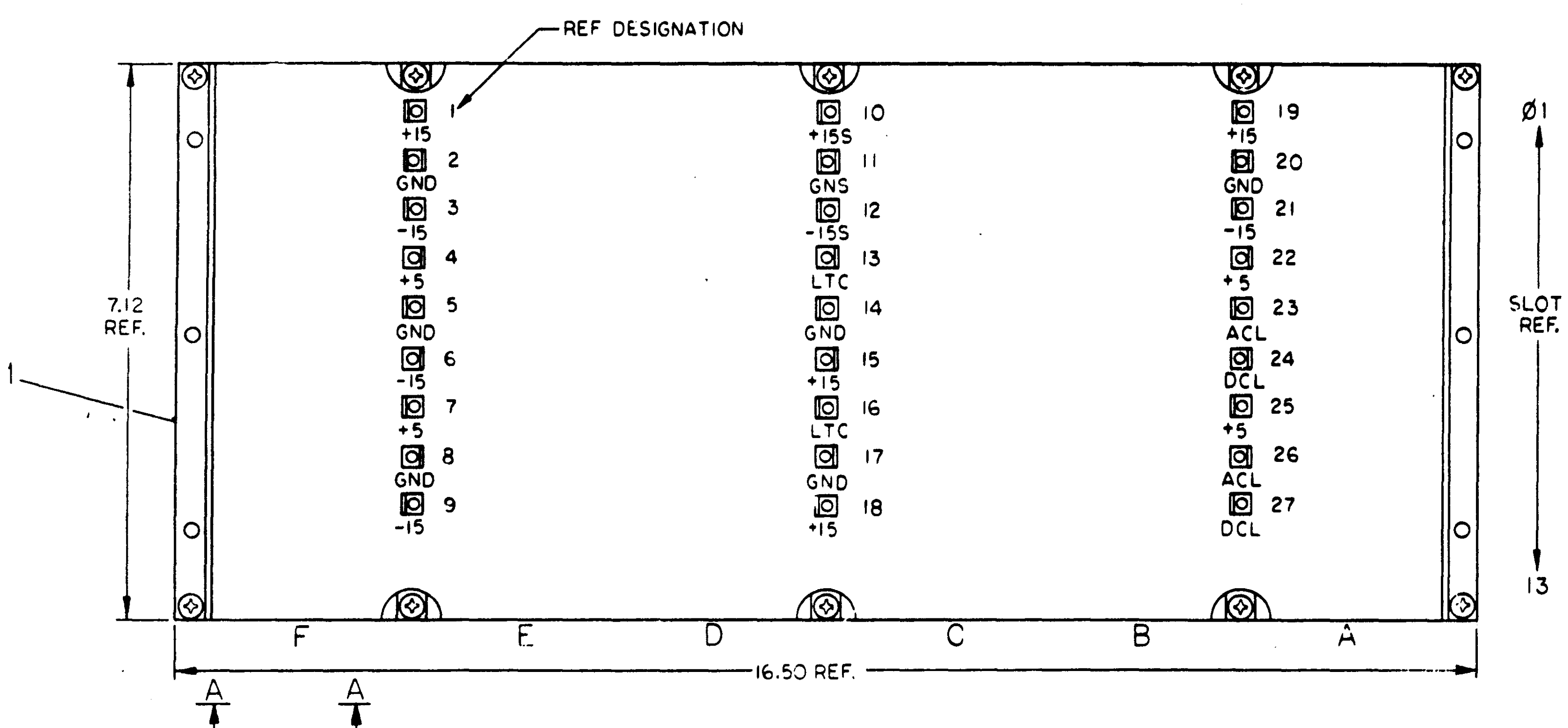
digital

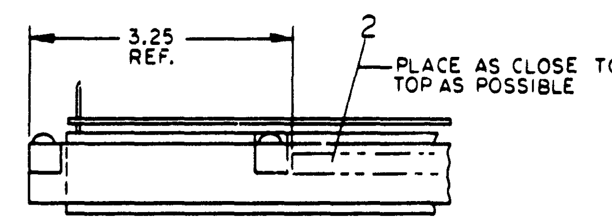
TITLE: API CABLE TERM & CONN

SIZE	CODE	NUMBER	REV.
D	BS	XM15 Ø-4	A

WIRE TABLE

ITEM NO.	DESCRIPTION AWG	DESCRIPTION COLOR	FROM PIN	TO PIN	SIGNAL
3	30	YEL	ACL (LUG 26)	D13F1	AC LOW L
3	30	YEL	DCL (LUG 27)	D13F2	DC LOW L





VIEW A-A

1	PACKAGING INSTRUCTIONS	3700040-0-0	7
REF	AWT REVISION STATUS	A-WT-7011524-0	6
1	DECAL LOGIC ASSEMBLY	7411581-01	5
REF	WIRE LIST (XM15)	K-WL XM15 0 WL	4
A/R	WIRE # 30 AWG SOLID YEL	9105740 44	3
1	LOGIC SERIAL NO LABELS	A SS 7407846 0 0	2
1	BACK PLANE ASSY (VT48)	D-AD-7010952-0-0	1
	DESCRIPTION	DWG./PART NO.	ITEM NO.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'

SURFACE QUALITY IN MICROINCHES ✓

CLASS OF ACCURACY (CHECK ONE)	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
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: —//—

DRN.
CHK'D
ENG
PROJ. ENG
PROD.

NEXT HIGHER ASSY. D-UA-XM15-0-0

SCALE 1/1

SHEET 1 OF 1

FIRST USED ON XM15

digital

TITLE: WIRED ASS'Y (XM15)

SIZE	CODE	NUMBER	REV.
D	AD	7011524-0-0	A

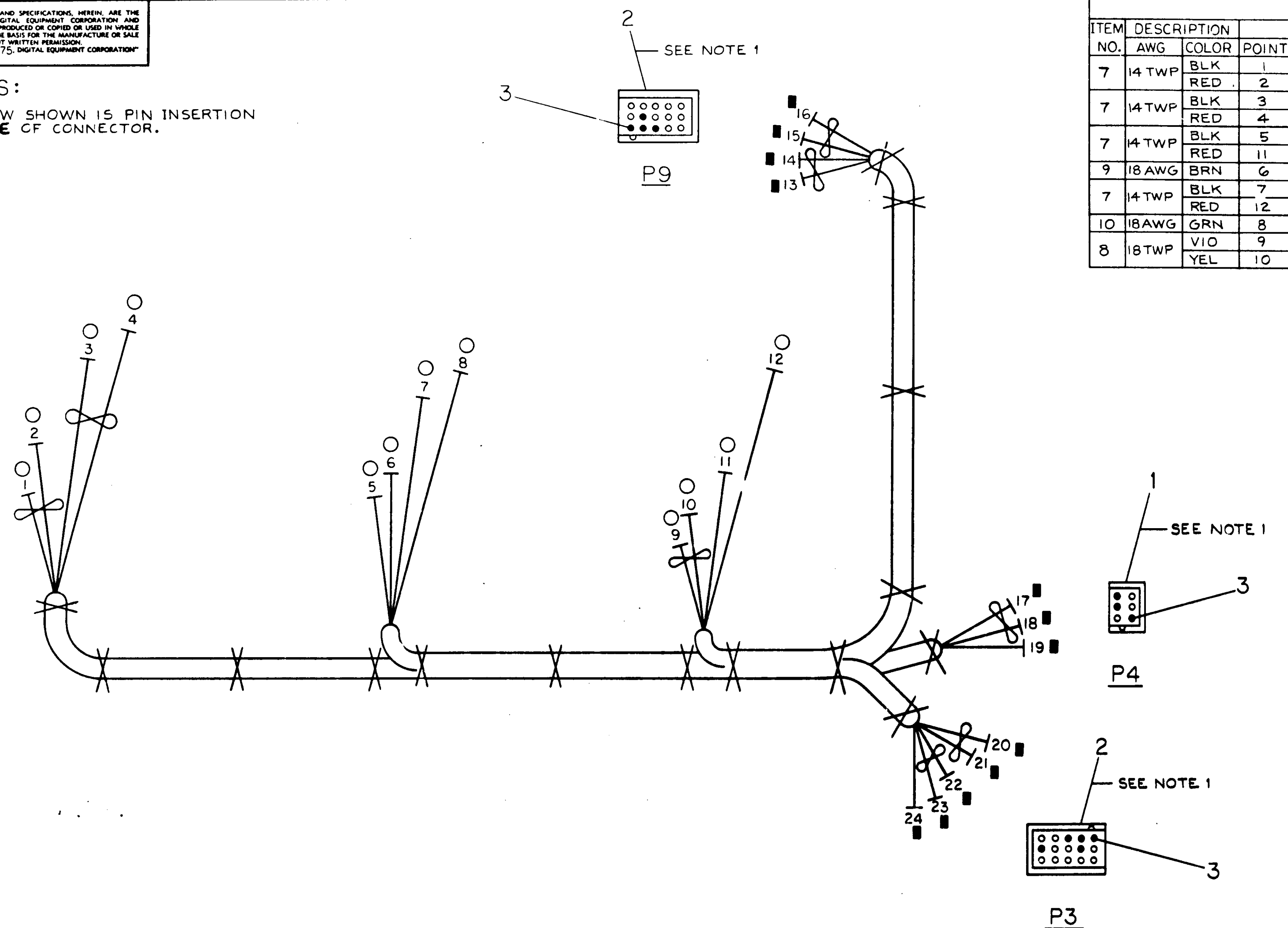
DIST.

REVISIONS

REV.	CHANGE NO.
A	00003

NOTES:

1. VIEW SHOWN IS PIN INSERTION SIDE OF CONNECTOR.



DO NOT REDUCE

SCALE

0 IN. 6 IN. 12 IN.

WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	FROM POINT	FROM CONNECTION	FROM WITH	TO POINT	TO CONNECTION	TO WITH	REMARKS
7	14 TWP	BLK	1		4, 6	16	P9-7	3	GND
		RED	2			15	P9-4	3	+5V
7	14 TWP	BLK	3			20	P3-5	3	GND
		RED	4			21	P3-1	3	+5V
7	14 TWP	BLK	5			14	P9-5	3	GND
		RED	11			13	P9-1	3	+5V
9	18 AWG	BRN	6			19	P4-2	11	LTC
7	14 TWP	BLK	7			22	P3-7	3	GND
		RED	12			23	P3-4	3	+5V
10	18 AWG	GRN	8			24	P3-14	11	-5V
8	18 TWP	VIO	9			17	P4-3	11	DCLO
		YEL	10		4, 6	18	P4-4	11	ACLO

		DESCRIPTION	DWG./PART NO.	ITEM NO.
	8	PIN, MALE	1209378-00	11
	A/R	WIRE, #18 AWG GRN	9107360-55	10
	A/R	WIRE, #18 AWG BRN	9107360-11	9
	A/R	WIRE, #18 TWP YEL/VIO	9107430-47	8
	A/R	WIRE, #14 TWP BLK/RED	9107440-02	7
	A/R	SHRINK TUBING	9107305-02	6
X	A/R	TIE WRAP	9007031	5
○	12	CONN., SOLDERLESS	9009262-0	4
■	4	PIN, MALE	1209378-08	3
	2	HOUSING, CONN., 15 PIN	1209951-15	2
	1	HOUSING, CONN., 6 PIN	1209351-06	1

QUANTITY & VARIATION

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	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

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL: SEE PARTS LIST

FINISH: —//—

DRN. Carl McCoy
CHK'D
ENG.
PROJ. ENG.
PROD.

NEXT HIGHER ASSY. D-UA-VT48-Ø-Ø

SCALE 1/1

SHEET 1 OF 1

FIRST USED ON VT48

digital

TITLE: LOGIC POWER HARNESS VT48

SIZE D | CODE IA | NUMBER 7011502-0-0 | REV. A

DIST.

REVISIONS: REV. A, CHANGE NO. 7011502-00-?01, 22 Jun 77, J DZEKEVICH

DEC FORM NO. DRD 100 C

D IA 7011502-0-0 A

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 10-30-75

TITLE XM15 MEMORY PROCESSOR

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE
A	ECO CHANGE	XM15-00001	F. DOLL	2-MAR-76	F. O.	24MAR76

TABLE OF CONTENTS

ENG	APPD	SIZE	CODE	NUMBER	REV
		A	SP	XM15-0-5	A

DEC 16-(392)-1079-N971
DRA 107

1.0 GENERAL DESCRIPTION

The primary function of the XM15 is to receive and process all requests made to memory. In addition, the XM15 provides mounting space and power for the Automatic Priority Interrupt (API) module.

The XM15 contains power, I/O bus interface, memory bus interface, and various control functions for the operation of the M7176 Automatic Priority Interrupt logic, the M7175 Memory Management logic, the M7174 Instruction Prefetch logic, and the M7173 Memory Port. The various XM15 functions are discussed in the following paragraphs.

1.1 Individual Module Description

M7176 Automatic Priority Interrupt (API)

The M7176 API provides eight levels of priority interrupts for the XVM System. Of these eight levels, the upper four are assigned to I/O devices and are initiated by flags (interrupt requests) from the devices. The lower four levels are programming levels and are initiated by software requests. High data rate or critical devices are assigned to high priority levels and can interrupt slower device service routines. M7176 holds the lower device interrupt request until it can be serviced. The source of the interrupt is also directly identified, eliminating the need for flag search routines.

A self-starting, high resolution (18 bits) task accounting clock is also contained on M7176. The accounting clock provides essential data that allows accurate appropriation of machine cost among multi-users of the XVM System. A single IOT reads and clears the contents of the task accounting clock register.

M7175 Memory Management

The M7175 provides the XVM System core memory with protect features to trap HALT, IOT, OAS and chained Execute instructions and the addressing of a non-existent memory bank. A boundary register and two relocation registers, and associated control logic, are used to establish the limits of the user's program and relocate the program upward in memory from the real machine location.

	SIZE	CODE	NUMBER	REV
	A	SP	XM15-0-5	A

DEC FORM NO DEC 16-(381)-1022-N370
DRA 108

The boundary register functions in two modes; protect and relocate. In the protect mode the boundary register sets the lower memory limit for the user's program. In the relocate mode the boundary register establishes the upper memory limit for the program, while the lower limit is established by the first relocation register. The second relocation register, called the share register, provides for memory segmentation in a multi-user environment.

In addition, there are software controlled modes which allow:

a. selection of indirect addressing with 15, 16, or 17 bits;

b. relocation disabling;

c. user IOT enabling;

d. write protection of the shared segment, and

e. specifying the shared segment length.

M7174 Instruction Prefetch (IPF)

The M7174 IPF provides the XVM System with improved instruction fetch times by prefetching presumed instructions from memory. IPF does this by monitoring requests to memory and synchronizing itself to the current instruction address. The IPF then attemps to prefetch up to four locations ahead of the processor. Simultaneously, the IPF continues to monitor memory references and, whenever possible, provides the requested instructions directly from its internal register file. Provisions to pause during operand and/or defer cycles to minimize memory conflicts are also provided by the IPF. Whenever the IPF fails to supply the requested instruction, or if it senses that the current instruction will cause the program to break sequence, the IPF will abort the current contents of its register file. The IPF may be enabled and disabled under program control or manually by means of a switch on the M7172 Bus Interface module.

M7173 Memory Port

The M7173 Memory Port arbitrates requests for memory access directly from the XVM, IPF, and the external processor input. M7173 drives, receives, and de-skews the XM15 memory bus. On the external processor input, M7173 has upper and lower limit address selection, negative address relocation (XV200 Unichannel systems), and "address float" which allows positive address relocation. The IPF and XVM inputs do not provide boundary or relocation selection. In addition, M7173 performs four way memory interleaving functions. XM15 may house an optional second memory port to allow greater flexibility in

	SIZE	CODE	NUMBER	REV
	A	SP	XM15-0-5	A

DEC FORM NO DEC 16-(381)-1022-N370
DRA 108

multi-processor configurations, memory interleaving and distribution, and improved IPF performance.

M7172 Bus Interface

The M7172 Bus Interface receives, drives, and de-skews the processor memory bus. M7172 converts processor address and control information to signals compatible to the XM15 and its memory bus and communicates with the memory port and IPF. Temporary storage for the current memory read data is also provided.

Internal Memory

The XM15 contains either 32K of MF15 core memory or 24K of ME15 core memory within the same BA11K mounting box.

1.2 SYSTEM INTERCONNECTIONS

XM15 Bus

The XM15 Bus is the bus between the memory port in the XM15 and the internal and external memory. If the optional second port is included in the XM15 there will be two independent XM15 buses.

The XM15 Bus connects all memory to the XM15. In addition, the XM15 Bus may be connected to the external processor input of another XVM System to form a multiprocessor system with two or more XVMs. Except for the absence of bus arbitration signals, the XM15 Bus is compatible with the Unibus.

CPU and IPU-to-Memory Bus (MDLs)

The central processor and I/O processor each asynchronously access memory over the same MDL bus. The priority structure concerning which processor's request is sent to the XM15 is determined by the processor memory port switch. The I/O processor is given first priority. The MDL bus consists of 18 bi-directional lines over which address and then data information is transmitted to and from the XM15. Various control signals are on this bus as well as provisions for interfacing the optional floating point processor (FP15).

IPU-to-I/O Devices (I/O Bus)

The I/O processor communicates with all devices over a common I/O Bus which contains bi-directional data lines, address lines, enable, request, and grant lines for API and data channel, and others such as program interrupt and skip request.

	SIZE	CODE	NUMBER	REV
	A	SP	XM15-0-5	A

DEC FORM NO DEC 16 (381)-1022-N370
DRA 108

Console-to-CPU (I Bus)

The indicator bus contains bi-directional lines to transmit information to the lights on the console and switch information from the console to the central processor. Several control lines are also located on the cable. The ME15/MF15 memory does not use the IBus.

API to Central Processor Bus

Because the XM15 contains several internal options which deal with the operation of the central processor, a special cable (API cable) is required so that the option may utilize these internal central processor signals.

2.0 SYSTEM SPECIFICATION

2.1 Physical Specification

The XM15 consists of a (13) thirteen slot hex backplane, an M7172, M7173, M7174, M7175 and M7176 module. In addition, there are several single height modules and interface cables. The backplane is mounted in a BA11K expander box. 32K of MF15 or 24K of ME15 memory may also reside in the BA11K. The XM15 is located below the console of the XV100 or in a standalone cabinet for add-ons.

2.2 Environmental Specification

Operating Temperature:	10^{o} - 50^{o} C input air
Humidity:	5 - 90% relative (noncondensing)
Input Voltage:	90-132 Vac, 115 Vac nominal 180-264 Vac, 230 Vac nominal
Frequency:	47-63 Hz, 3 phase cabinet power
XM15 Power Required: (does not include memory)	5 V ± 5% including ripple 25A max.

2.3 Unibus Specification

Standard Unibus rules must be followed concerning its length and loading when connecting to the external processor input (EPI). The EPI represents one bus load when the one port (M7173) configuration is used and two bus loads when the XM15 is dual ported.

3.0 Programming Specifications

3.1 IOTs

701701	MPSK	Skip on memory protect violation flag.
701702	MPCV	Clear memory protection flag.
701704	MPLD	Load boundary register.
701741	MPSNE	Skip on non-existent memory flag.
701742	MPEU	Enter User Mode.
701744	MPCNE	Clear non-existent memory flag.
700032	RDMM	Load MM register into AC.
700024	LDMM	Load MM register.
701724	MPLR	Load relocation register.
701762	RDCLK	Load CLK into AC.
701764	IPOFF	Turn the IPF off.
703302	CAF	Clear all flags.
707742	RES	Restore User Mode.
703304	DBK	Debreak API Level.
703344	DBR	Debreak and Restore.
705501	SPI	Skip on PLs inactive.
705512	RPL	Load PLs into AC.
705521	EBI	Enable breaks.
705522	DBI	Disable breaks.

3.2 Register Functions

Boundary Register

A ten bit register which when used in protect mode, sets the lower memory limit in increments of (400_8) for the users program. When in relocate mode the boundary register establishes the upper memory limit for the user program.

Relocation Register

A ten bit register which is added to the CPU address bits 0-9, when in user mode, creating the actual memory address. This register is not used in protect mode.

Clock Register

Contains the count of a free running oscillator which has a 10 usec resolution. The clock is disabled when API level 0-3 are being processed and is cleared after being read into the AC. Overflow is not prevented and will occur every 2.62 seconds.

IPOFF Register

A one bit register which is loaded with AC bit 17. When set the IPF is disabled until the bit is cleared by either the IOT IPOFF and AC bit 17 on a 0 or a CAF being issued.

Non-Existent Memory Flag

Set when non-existent memory is referenced while in user mode. Cleared by CAF, MPCNE or DBR.

Memory Protect Flag

Set if a privileged instruction is detected, an address boundary violation occurs, a non-existent memory reference occurs or a privileged write modification is attempted while in user mode.

Privileged instructions are the following =
(HLT, OAS, IOT, XCT of XCT, CAL).

User Mode

A one bit register which is set by the IOT MPEU and is cleared if the memory protect flag is set or an interrupt occurs. The bit can be restored by issuing a DBR IOT followed by an indirect memory reference. When User Mode is true, the memory management features which are selected, are turned on.

Memory Management (MM) Register

The MM register contains mode control bits, the Share Address Register (SR), and the Segment Length Register (SLR). The MM register is read to the AC by IOT 700032 and is loaded from the AC by IOT 700024. MM register bit assignment are shown in the following figure and are described in the following listing.

0	1 2	3	4	5	6 7	8 ◄——► 17
R DIS	G M	IP	WP	SH	SLR	SHARED ADDRESS

M7175 Memory Management (MM) Register Format

R DIS - Relocate Disable (Bit 0)

When set, inhibits relocation and all protect violations (except NEXM) while in User Mode. This allows the use of G Mode without the protection or relocation features. When bit 0 is clear, normal relocation and protection occur except as determined by Share Mode and IOT Enable.

GM - G Mode (Bits 1, 2)

The G Mode is entered whenever the system is in User Mode and the G0, G1 bits (MM bits 1 & 2) are set to binary 1, 2, or 3. The MM signals the CPU to pass 18 bits of any defer address and causes PC bits 0-2 to be stored during a JMS instruction rather than L, BM and UM. While in G Mode, G1, G1 select the address width through M7175.

G0, G1 = 00 - normal mode, not G Mode
= 01 - G Mode with 16 bit defers
= 02 - G Mode with 18 bit defers
= 03 - G Mode with 17 bit defers

G0, G1 bits also determine the virtual position of the Shared Address Space (SAS).

IP - IOT Permit (Bit 3)

Bit 3 of the MM, which when set, allows execution of IOTs while in User Mode.

WP - Write Protect (Bit 4)

Bit 4 of the MM, which when set, write protects the External Shared Address Space (ESAS). A protect violation and trap occurs if an ESAS write is attempted.

SH - Share (Bit 5)

Bit 5 of the MM enables Share Mode when set.

SLR - Segment Length Register (Bits 6, 7)

These bits determine the size of the external shared segments. Always equals ISAS + ESAS.

Bits 6, 7 = 0 = 1000_8 (512_{10}) Locations

= 1 = 2000_8 (1024_{10}) Locations

= 2 = 10000_8 (4K) Locations

= 3 = 20000_8 (8K) Locations

Shared Address Register - SA (Bits 8 - 17)

The Shared Address Register (bits 8 - 17 of the MM) contains the relocation factor for the share address. It points to the position of ESAS - 256 in core. SA bits 8-17 are added to the CPU address bits 5-9.

XM15 Cable Configurations

1.0 INPUT CABLES

1.1 No FP15

Function	From Device	From Loc	To Device	To Loc	Cable
MDL	KP15-C	J02	XM15	A08	BC08A-7
MDL	KP15-C	J03	XM15	B08	BC08A-7
API CONTROL	KP15-C	H03	XM15	E05	BC08A-7
I BUS	KP15-C	H02	XM15	D05	7006437-8
I/O BUS	KP15-C	MN02/03	XM15	AB01/02	BC09B-7
	EXTERNAL PROCESSOR		XM15	A/B 13	BC11A

1.2 With FP15

Function	From Device	From Loc	To Device	To Loc	Cable
MDL	KP15-C	J02	FP15	H29	BC08A-5
MDL	KP15-C	J03	FP15	H30	BC08A-5
API CONTROL	KP15-C	H03	FP15	H31	BC08A-5
I BUS	KP15-C	H02	XM15	D05	7006437-8
I/ O BUS	KP15-C	MN02/03	XM15	AB01/02	BC09B-7
MDL	FP15	J29	XM15	A08	BC08A-7
MDL	FP15	J30	XM15	B08	BC08A-7
API CONTROL	FP15	J31	XM15	E05	BC08A-7
	EXTERNAL PROCESSOR		XM15	A/B13	BC11A

2.0 OUTPUT CABLES

Function	From Device	From Loc	To Device	To Loc	Cable
EXT PROCESSOR	XM15	A/B10	TO NEXT DEVICE		BC11A
MEM BUS 1	XM15	C/D10	MEMORY	A/B01	BC11A
MEM BUS 2	XM15	C/D13	MEMORY	A/B01	BC11A
I/O BUS					
XVM SYSTEM	XM15	AB03/04	BA15	AB01/02	BC09B-4
PDP15 SYSTEM	XM15	AB03/04	BA15	AB01/02	BC09B-10
	BA,DW15		DR,RP,RF15		BC09B-12
	DR15	AB03/04	TC15		BC09B-15
	UC & RP or RF		TC15		BC09B-25

NOTES:

If the external processor bus does not continue from the XM15 it will be terminated in XM15 slot A/B10 with a M930 module. BUS DC LO will be grounded if no EXT PROC.

The memory bus is terminated at the last memory by an M930 in slot A/B09.

Memory on the processor rear door should be positioned last on the XM15 bus eliminating the necessity of exiting the rear door with the XM15 bus for ease of cabling and minimizing bus length.

XM15 bus #2 follows the same rules as bus #1 when present.

5.0 MAINTENANCE

5.1 Equipment

The following equipment is helpful in troubleshooting problems in the XM15.

Tektronix 453 oscilloscope or equivalent
Extender boards

5.2 The XM15 has no mechanical parts requiring regular service. Therefore, only standard processor maintenance procedures are necessary to insure reliable operation.

5.3 Refer to Chapter 7 of the Maintenance Manual for adjustments.

DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASSACHUSETTS

ENGINEERING SPECIFICATION

DATE 11-6-75

TITLE XM15 Customer Acceptance Procedure

REVISIONS

REV	DESCRIPTION	CHG NO	ORIG	DATE	APPD BY	DATE

ENG	APPD	SIZE	CODE	NUMBER	REV
[signature]	[signature]	A	SP	XM15-0-6	

DEC FORM NO DEC 16-(382)-1070-N971

SCOPE

The following steps will be followed to accept and insure that all necessary paper work, diagnostics, etc., are included with the XM15.

HARDWARE AND SOFTWARE

Reference prints A-PL-XM15-0-8 for necessary hardware and software.

PROCEDURE

1. Visually inspect for loose bolts, power plugs, modules, pinched cables or bent pins.
2. Check that all fans are working properly.
3. Check that all console functions work correctly.
4. Load and run all diagnostics. Appendix I shows diagnostics and run times. The IPF (M7174) should be "ON".
5. Load and run system exerciser.
6. If operating system supplied; one pass of the O. S. acceptance test.
7. When all diagnostics have been run, acceptance of the XM15 system is complete.

APPENDIX I

All diagnostics must run error free.

Program	Run Time
Extended Memory Address Test	2 Passes/Bank
Extended Memory Checkerboard	2 Passes/Bank
Instruction Test Pt. 1	10 Min.
Instruction Test Pt. 1A	10 Min.
Instruction Test Pt. 2	10 Min.
I/O Test (API)	15 Min.
Memory Protect Test	2 Passes
Memory Relocate Test	2 Passes
XM15 Memory Management Test	1 Pass

SIZE	CODE	NUMBER	REV.
K	WL	XM15-Ø-WL	C

REVISIONS			
CHK	CHANGE NO.	REV.	
EJD	XM15-00001	A	F. DOLL 2-JAN-76
	XM15-00002	B	
	XM15-00003	C	

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
XM15		PARTS LIST		

DRN. M Normand	DATE 29 JAN 76	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D	DATE 29 JAN 76	
ENG.	DATE 29 JAN 76	
PROJ. ENG.	DATE 29 JAN 76	
PROD.	DATE 29 JAN 76	
NEXT HIGHER ASSEMBLY B-DD-XM15-Ø		
SCALE		
SHEET 1 OF 1		

TITLE
WIRE LIST
XM15

SIZE	CODE	NUMBER	REV.
K	WL	XM15-Ø-WL	C

DIST.

DEC FORM NO
DBR 109