

MLSI-KPV11

POWER FAIL DETECTOR/LTC MODULE

For use with DEC™ LSI-11™ Computers
INSTRUCTION MANUAL

MLSI-KPV11

POWER FAIL DETECTOR/LTC MODULE

For use with DECTM LSI-11TM Computers
INSTRUCTION MANUAL



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Document Part Number: 80040338
Document Revision Level: A
Product Revision Level: C

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The postage-prepaid READER'S COMMENTS page at the end of this instruction manual requests the user's critical evaluation to assist us in preparing future documentation.

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Price: \$10.00

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LIST OF DRAWINGS AND SCHEMATICS

<u>NUMBER</u>	
44040338	SCHEMATIC DIAGRAM: MLSI-KPV11
45040338	ASSEMBLY DRAWING: MLSI-KPV11

INTRODUCTION

This is a preliminary technical manual for the MDB MLSI-KPV11 Power Fail Detect/LTC module to be used with Digital LSI-11 Q-bus computers.

PRODUCT DESCRIPTION

The MLSI-KPV11 is a dual-size Power Failure Detector/Line Time Clock module which is provided with removable/pluggable bus terminators. The bus terminators are 120 ohm impedance packs, which can be replaced with 220 ohm impedance packs or removed completely. The MLSI-KPV11 is furnished with 22-bit bus termination (BDAL0 - BDAL21).

The programmable Line Time Clock (LTC) feature is switch selectable to provide PDP-11/03, SMU, or KW11-L compatibility. The feature allows the user to enable or disable interrupts under program control. The MLSI-KPV11 has 4-level interrupt capabilities when used as a KW11-L compatible module. The DEC KPV11 has 1-level interrupt only. External clock capabilities are also provided.

The MLSI-KPV11 is functionally equivalent to the DEC KPV11-A, -B, and -C. The KPV11-A provides power failure detection and a Line Time Clock only; the KPV11-B provides power failure detection/LTC and 120 ohm bus termination; and the KPV11-C provides power failure detection/LTC and 220 ohm bus termination. However, the DEC modules have only 18-bit bus termination, whereas the MDB module terminates 22 bits.

The main differences between the MDB and DEC modules relate to the type of connectors on the modules, and the use of these connectors.

The DEC KPV11 utilizes three spade lugs for connection to a 24VAC source. The 24VAC source provides the 50 or 60 Hz reference for the Line Time Clock function and is the power fail monitor signal for the power sequence circuit.

The MDB MLSI-KPV11 utilizes a Molex-type connector for connection to the required 24VAC source. The output voltage source should come from a 24VAC center tap transformer and can be connected to J2 on the module. Since the MLSI-KPV11 utilizes a Molex-type connector, an existing DEC cable cannot be directly connected to the MDB module without first changing the connectors on the cable. A mating connector and pins for the MDB connector is supplied with each MLSI-KPV11 to allow the user to make the necessary modification.

The DEC KPV11 contains a berg connector that is used when the module is connected by a DEC cable to the DEC Console Control and Indicator Panel. The MDB module utilizes a different type of connector that is not compatible to the DEC cable. Moreover, the DEC Control Panel contains circuitry that is also on the MDB MLSI-KPV11. Therefore, the MDB module cannot be used with the DEC Control Panel.

A programmed shorting plug (MLSI-KPV-JMPR), inserted into the berg connector, is also provided with the MLSI-KPV11. This plug straps the board for circuits to function properly when a switch panel is not connected. When inserted, the DC ON circuitry is enabled and the LTC and HALT circuitry is disabled. Changing connections on the shorting plug can allow the LTC to be enabled.

INSTALLATION

The MLSI-KPV11 may be installed in the last slot of the backplane, or it may be installed in any slot after the last functioning module. If it is installed in the last slot of the backplane, Bus Grant Continuity Cards (MLSI-BGC) must be placed in the A or C portion only of all vacant (normal Q-bus wired) slots between the MLSI-KPV11 and the last functioning module. (Bus Grant Cards are not required in Slots 6-C and 7-C when an MLSI-BPA84-A type backplane/card guide is utilized, as standard Q-bus signals are not present on slots 6 C-D and 7 C-D.)

For additional information on the KPV11 module, refer to the DEC Memories and Peripherals Handbook, 1978-79.

JUMPER AND SWITCH SETTINGS

Select the appropriate interrupt level as follows:

TABLE 1
INTERRUPT LEVEL FOR LINE TIME CLOCK INTERRUPT

	5 J-H	3 J-H	6 J-H	4 J-H
LEVEL 4	●	○	○	○
LEVEL 5	●	●	○	○
LEVEL 6	●	○	●	○
LEVEL 7	●	○	●	●

● = Jumper Removed
○ = Jumper Installed

NOTE: The MLSI-KPV11 is factory configured for Interrupt Level 4.

The Interrupt Vector Address of the Line Time Clock Interrupt is 100_g . This address cannot be changed.

The Device Address Switch Register (SWR) is 777570_g .

The Device Address Line Time Clock Status (LKS) is 777546_g .

The Device Address SWR and LKS cannot be changed.

Jumpers to enable or disable the Switch Register and Line Clock Status are as follows:

SWR OUT \overline{SWRO} = 10 J-H

SWR IN \overline{SWRI} = 12 J-H

LKS OUT \overline{LKSO} = 13 J-H

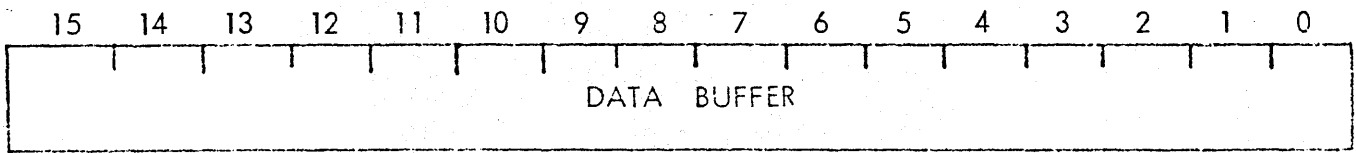
LKS IN \overline{LKSI} = 11 J-H

The register is enabled when the jumper is installed.
The register is disabled when the jumper is removed.

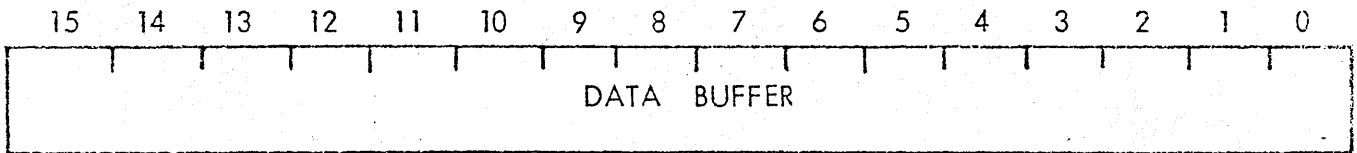
REGISTER ASSIGNMENTS

FIGURE 1
REGISTER ASSIGNMENTS

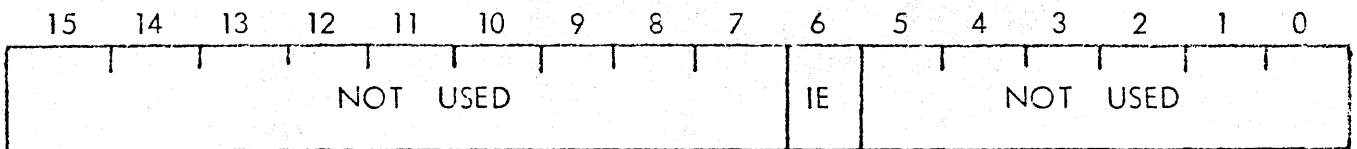
SWITCH REGISTER = SWRO = 777570₈ WRITE ONLY



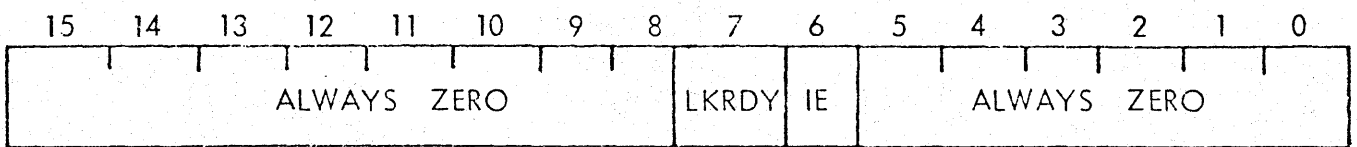
SWITCH REGISTER = $\overline{\text{SWRI}}$ = 777570₈ READ ONLY



LINE CLOCK STATUS = $\overline{\text{LKSO}}$ = 777546₈ WRITE ONLY



LINE CLOCK STATUS = $\overline{\text{LKSI}}$ = 777546₈ READ ONLY



IE = LINE TIME CLOCK INTERRUPT ENABLE
LKRDY = LINE TIME CLOCK INTERRUPT READY

ADDITIONAL JUMPERS

Install additional jumpers on the MLSI-KPV11 for appropriate applications as specified in Table 2.

TABLE 2
ADDITIONAL JUMPERS

JUMPER	APPLICATION
1 J-H	Install to terminate BDMGOL
2 J-H	Install for EXTCLK 2
2 J-K	Install for EXTCLK 1
7 J-H	Install to terminate BDMGIL
8 J-H	Install to assert BSACKL when \overline{RPLY} , \overline{SYNC} , and BDMGI are asserted
9 J-H	Install if using LTC for clock
9 J-K	Install when using EXTCLK 1 or EXTCLK 2 for clock
14 J-H	Install to always enable clock
14 J-K	Install for DCON to enable ACOK
15 J-H	
15 L-K	Configured for desired outputs at Test Points PSON 1 and PSON 2 (For remote DC power on)
15 L-M	
16 L-M	Install to enable BEVNTL
16 J-K	Install to allow BEVNTL when LKIEN is set
16 J-H	Install to allow BEVNTL when LTC switch is enabled

PIN CONNECTIONS

Tables 3 and 4 list the Q-bus signals present on each pin of the P1 and P2 connectors. Figure 2 shows the strapping arrangement of the programmed shorting plug (MLSI-KPV-JMPR) which mates with the MLSI-KPV11 and allows the circuits on the board to function properly when a switch panel is not connected.

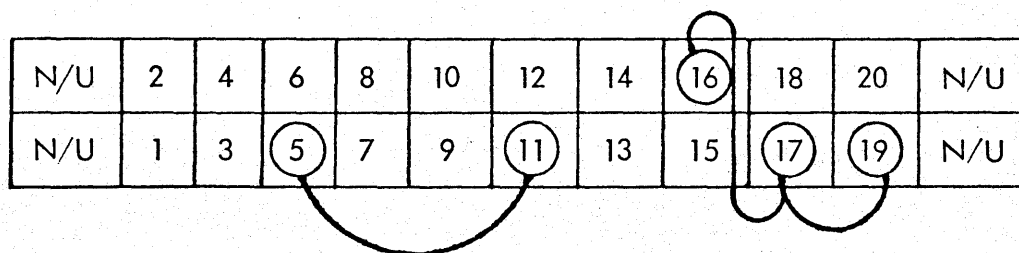
TABLE 3
P1 CONNECTIONS

PIN #	BUS SIGNAL
1	BPOKH
2	BEVNTL
3	SRUNL
4	EXTCLK 2
5	GND
6	DCOK
7	RUNLIT
8	N/C
9	BHALTL
10	BDCOKH
11	HALT OFF
12	HALT ON
13	+5VDC
14	HALT
15	LTC
16	GND
17	LTC OFF
18	LTC ON
19	DC ON
20	DC OFF

TABLE 4
P2 CONNECTIONS

PIN #	BUS SIGNAL
1	AC1
2	GND
3	GND
4	AC2

FIGURE 2
MLSI-KPV11 SHORTING PLUG (MLSI-KPV-JMPR)



MAINTENANCE

In the event of apparent malfunction, refer to the assembly drawings and logic diagrams contained in this manual. Check to be sure that connectors are seated properly.

Repair the module using appropriate skills, techniques, and materials. If you wish MDB Systems to repair the module, contact MDB Systems' Customer Service Department and request a Return Material Authorization (RMA). Once return authorization is granted, pack the module carefully, along with your best evaluation of trouble symptoms, and ship it, prepaid, to MDB Systems, Inc.

DRAWINGS

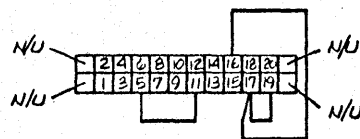
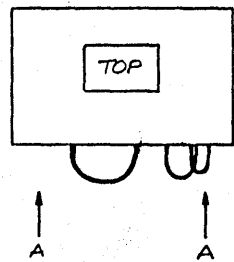
The following pages contain logic diagrams and assembly drawings useful in maintaining and repairing the module.

4

3

2

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		RELEASE TO PRODUCTION ECO NO. 1743	3-9-82	Jm
B		ECO NO. 1912	5-11-82	Jm
C		ECO NO. 2138	9-29-82	



WIRING VIEW
(VIEW A)

NOTE:
1. THE PARTS LIST IS FOR REFERENCE ONLY
2. LABEL CONNECTOR "TOP" AS SHOWN

REF PARTS LIST			
ITEM NO.	DESCRIPTION	PART NO.	QTY
1	CONN, BERG 24 PIN	65043-025	1
2	CONTACTS	47745	5
3	WIRE, 26AWG, STRD/GRN		4*

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QTY	FCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.		
FRACTIONS	DECIMALS	ANGLES	MDB SYSTEMS, INC.	
±	±	±		
MATERIAL		APPROVALS	DATE	MLSI-KPV-JMPR
FINISH		DRAWN	3-9-82	
NEXT ASSY		CHECKED	Jm	
USED ON		ISSUED	3-82	
APPLICATION		DO NOT SCALE DRAWING	SIZE	FCM NO.
			C	51648
			SCALE	DWG. NO.
				50049200-000
				REV. C
				SHEET 1 OF 1

DWG. NO. 50049200-000 SHEET 1 REV. C

4

3

2

1

8

7

6

5

4

3

1

DWG. NO. 44040338

SM 1 REV C

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	ECO NO. 1191	8-81	
	B	ECO NO. 1404	11-9-81	
	B1	ECO NO. 1453	12-2-81	
	B2	ECO NO. 1470	12-10-81	
	B2	RELEASE TO PRODUCTION ECO NO. 1475	12-28-81	X
	B3	ECO NO. 1754	3-10-82	
	B4	ECO NO. 1961	5-27-82	
	C	ECO NO. 2106	8-16-82	
	C	RELEASE TO PRODUCTION ECO NO. 2241	12-28-82	

D

D

C

C

B

B

A

A

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QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES = .XX ± = °			CONTRACT NO.	
MATERIAL			APPROVALS	DATE
FINISH			DRAWN JAY MCNEILLY	8-81
NEXT ASSY			CHECKED	
USED ON			ISSUED <i>Jon</i>	8-81
APPLICATION			SIZE D	FSCM NO. 51648
DO NOT SCALE DRAWING			DWG. NO. 44040338	REV C
			SCALE	SHEET 1 OF 5

MDB SYSTEMS, INC.

MLSI - KPVI I

8

7

6

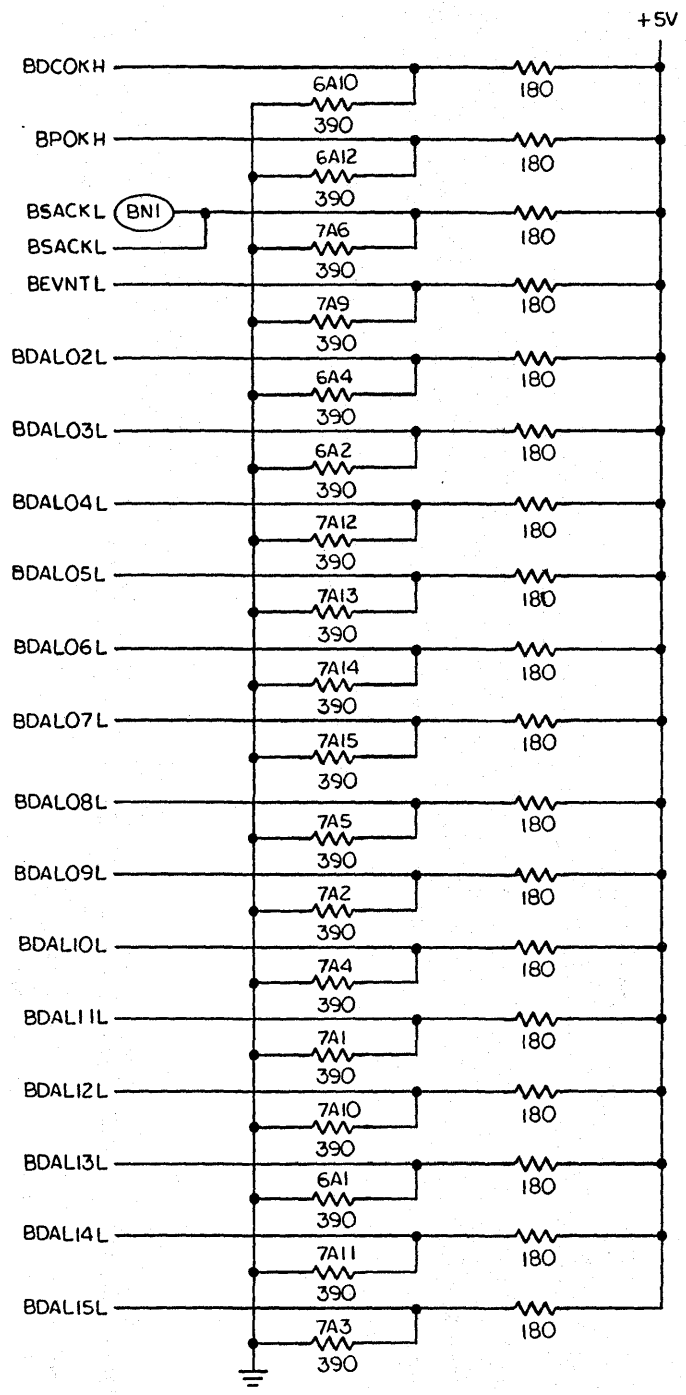
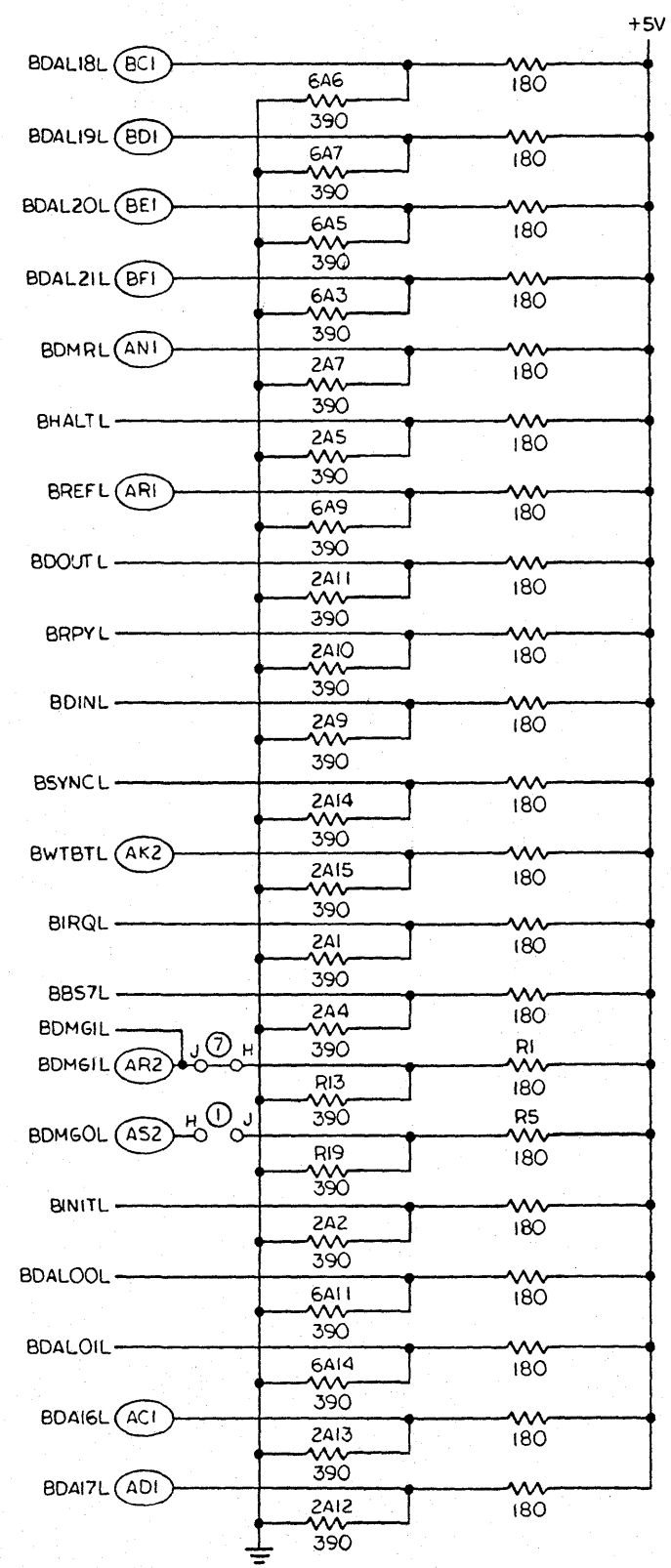
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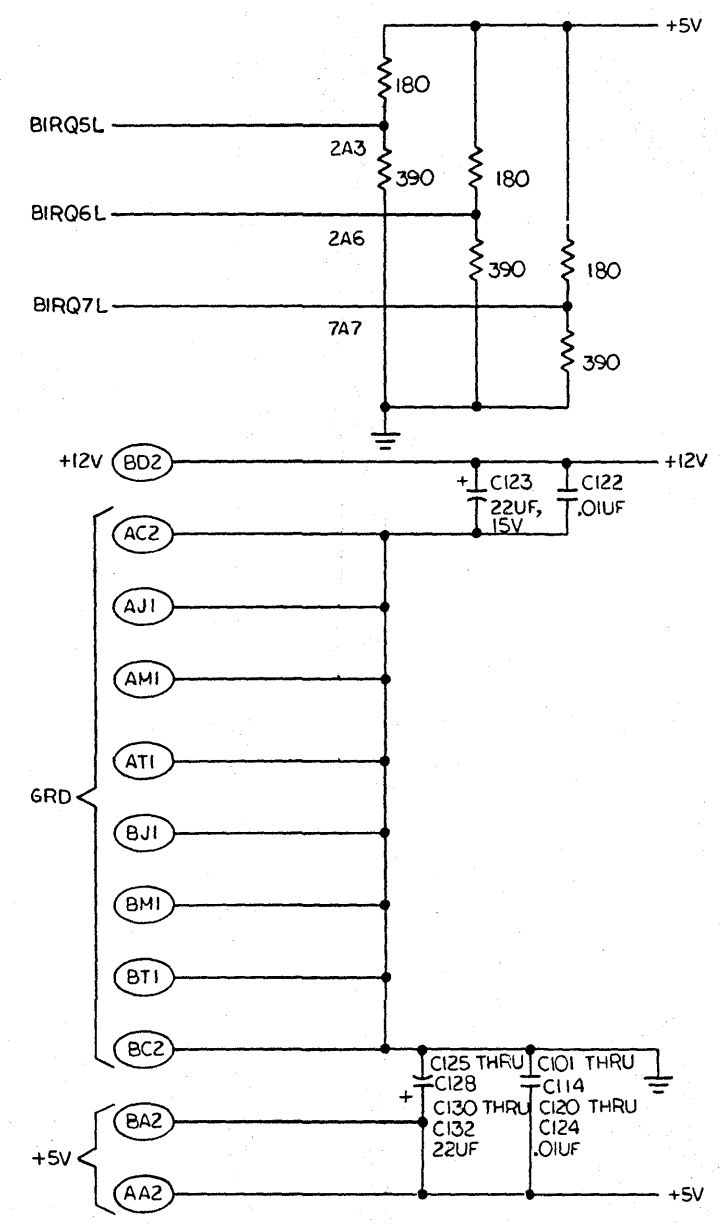
3

2

1

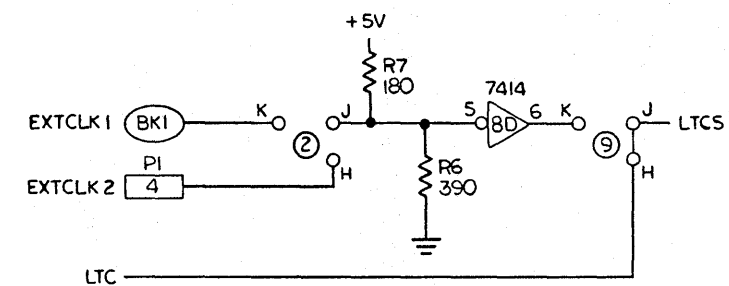
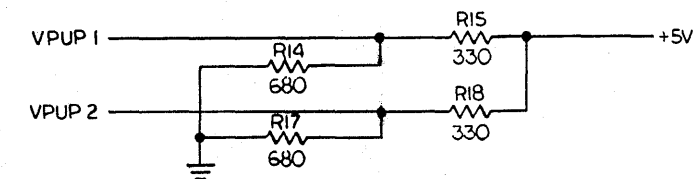
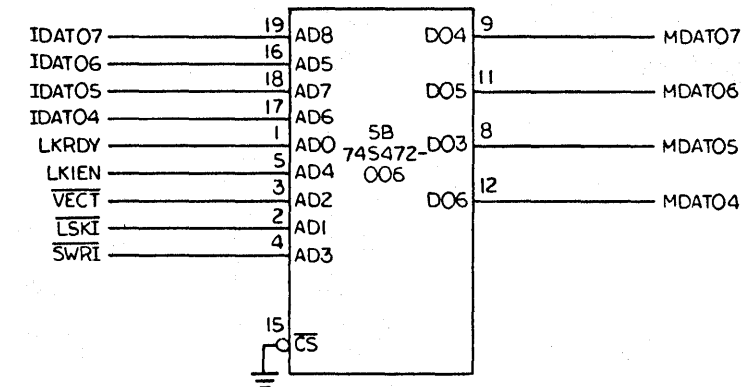
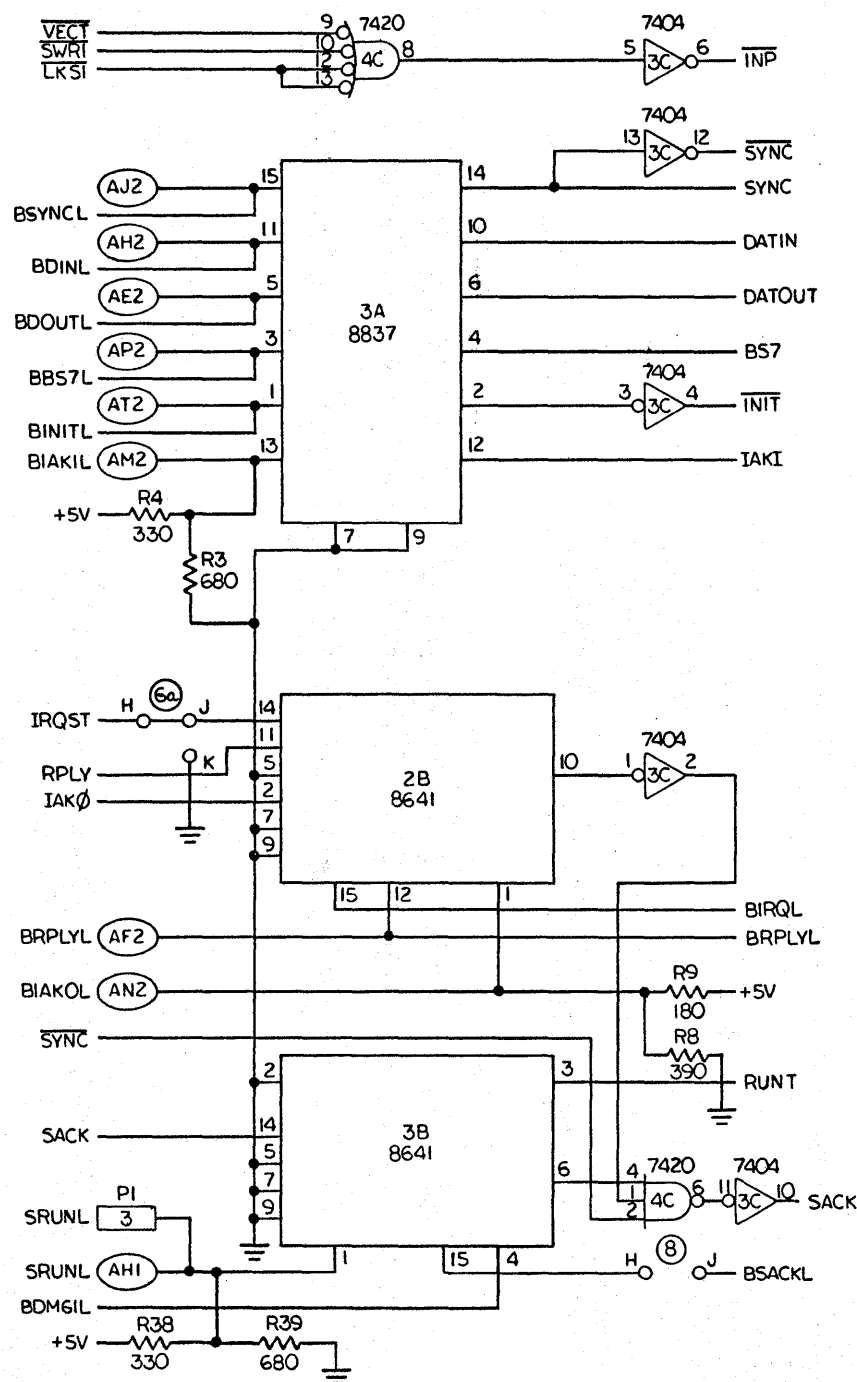
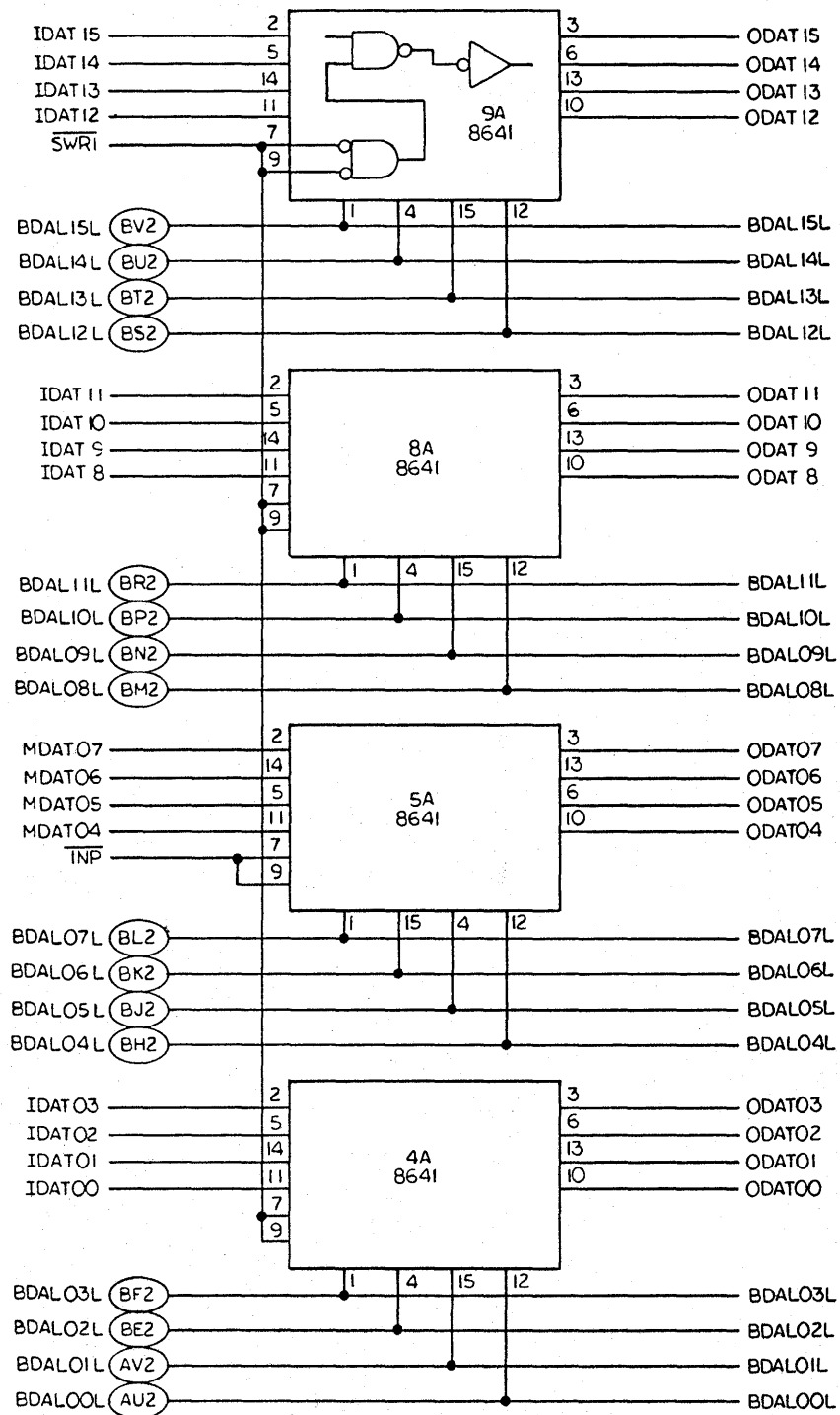


NOTE: UNLESS OTHERWISE SPECIFIED
 1. ALL RESISTORS VALUES ARE IN OHMS AND ARE 1/4 WATT



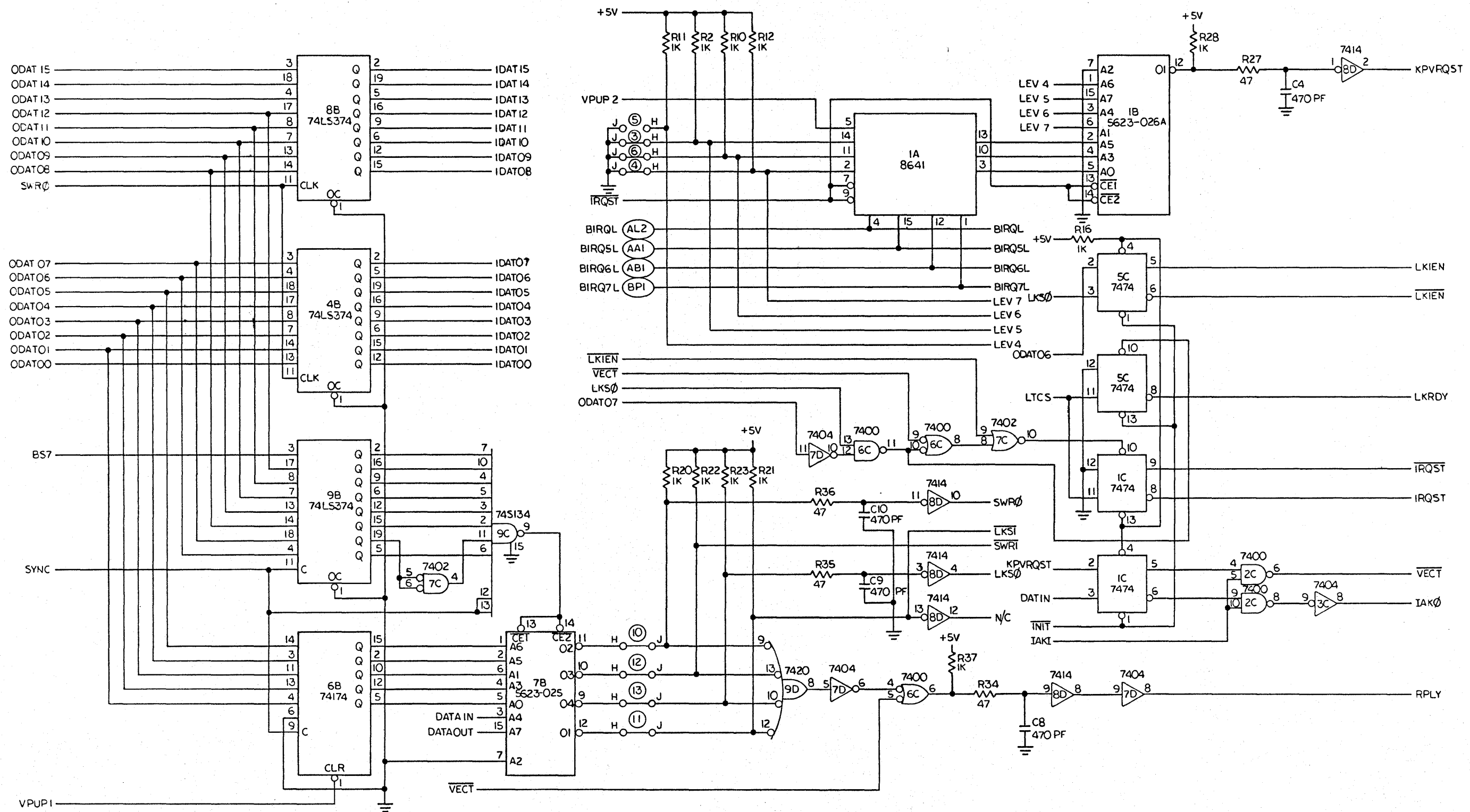
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DRAWN	J. MC.	D	51648	44040338	C
ISSUED	<i>[Signature]</i>	SCALE			SHEET 2 OF 5



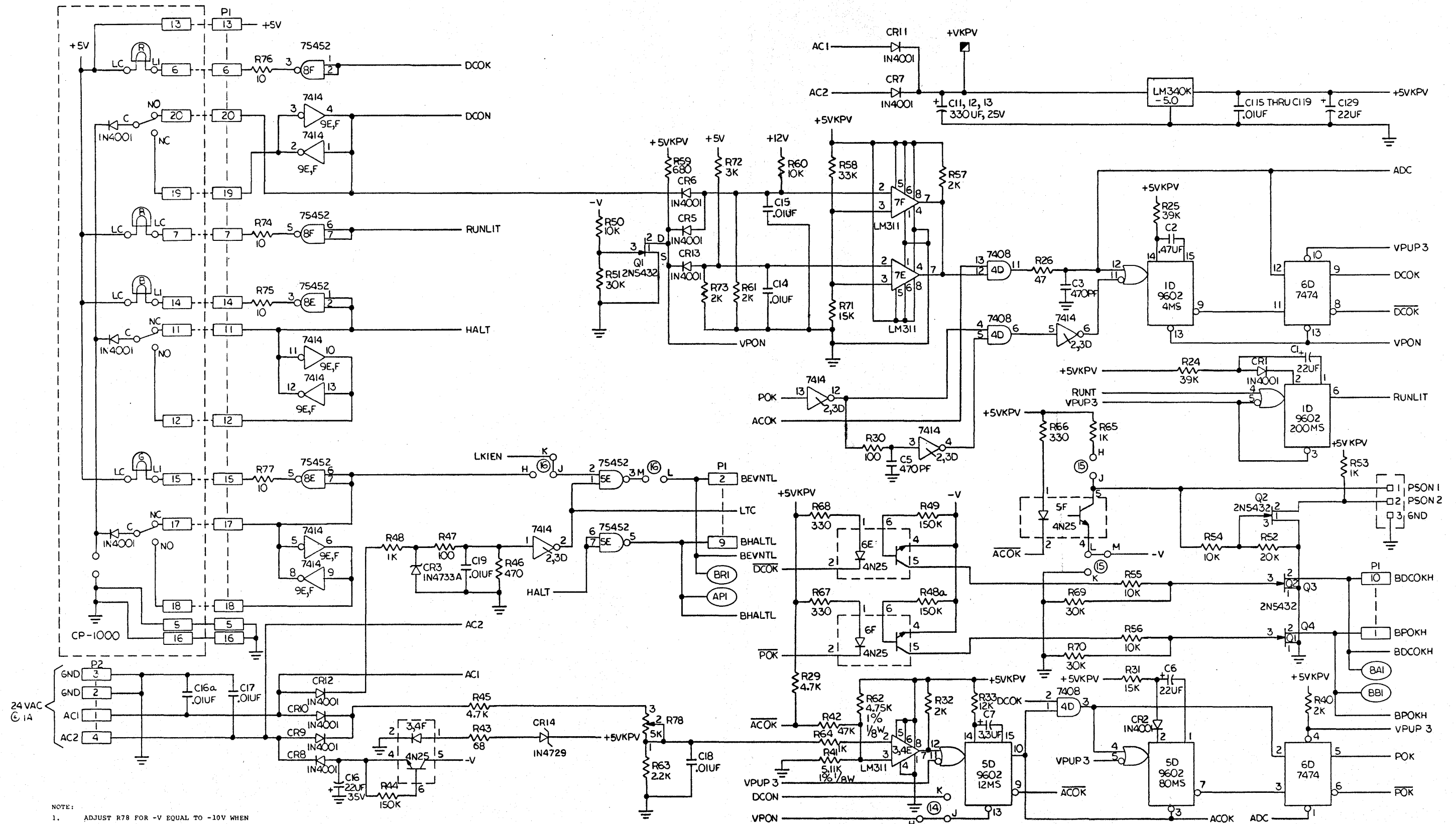
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ISSUED <i>Jm</i>		SCALE			SHEET 4 OF 5



- NOTE:
1. ADJUST R78 FOR -V EQUAL TO -10V WHEN +VKPV EQUAL TO +10V
 2. ADJUST R79 (AC INPUT EQUAL TO ABOUT 105VAC) FOR PULSES AT 4E PIN 7. LOWER AC INPUT TO APPROX. 98 VAC, PULSES SHOULD STOP.

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SCALE		SHEET 5 OF 5		

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DRAWN

ISSUED

SIZE FSCM NO.

51648

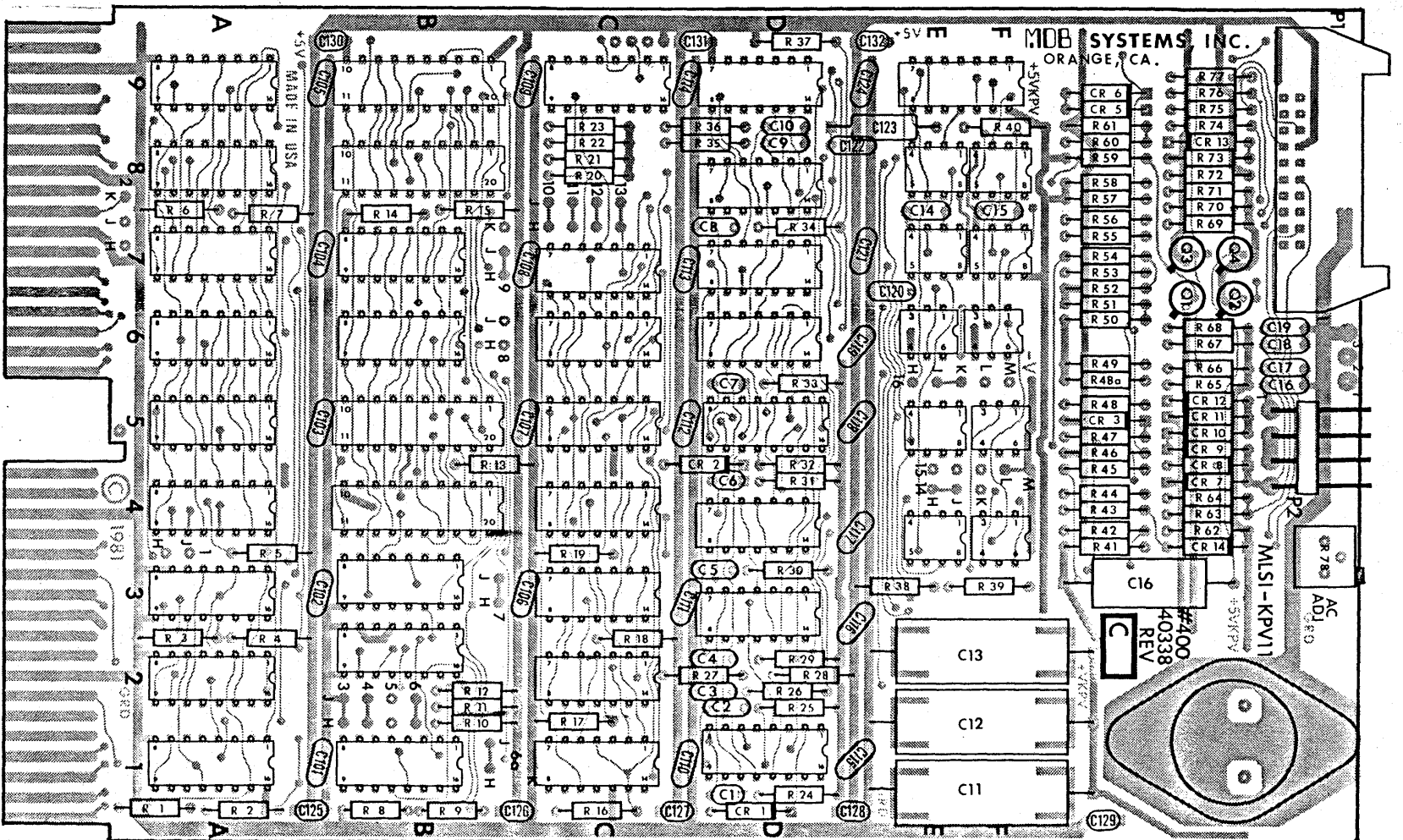
DWG. NO.

45040338

SCALE

SHEET 1 OF 1

REV
C



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