MOSTEK

MICROCOMPUTER SYSTEMS

Hardware Manual & Installation Guide

SYS-80 F
DUAL FLOPPY DISK
MICROCOMPUTER SYSTEM

TABLE OF CONTENTS

SYS-80F OPERATIONS MANUAL

The SYS-80F is a powerful floppy disk based system which has
applications both in the development environment where programs (1)
are developed for one of MOSTEK's families of microcomputer chips
and in OEM type applications where the system is used as a low cost
minicomputer replacement. The software requirements of these two
environments are quite different but are built on the same base of
system control programs. Supplied with the SYS-80F as standard
software are:

> FLOPPY DISK HANDLER (FDH)
>
> INPUT OUTPUT CONTROL SYSTEM (IOCS)
>
> MONITOR
>
> ASSEMBLER (ASM)
>
> EDITOR (EDIT)
>
> PERIPHERAL INTERCHANGE PROCESSOR (PIP)
>
> RELOCATABLE MODULE LINKER (LINK)

The first three modules are essential to any type of SYS-80F
application. The assembler is the most often used development aid.
Some users will require higher level languages such as BASIC, PL/1
or FORTRAN.

The Editor, PIP, and Linker Processors can be used with both assembly
level programming or with high level language programming.

For the OEM user, some custom software will usually be required and
is typically designed and supplied by the OEM. These programs may be
written in either assembly language or some high level language. MOSTEK
presently has available a Business Basic which is an extension of the
Dartmouth Basic. In development by MOSTEK is a compiler for a PL/1
subset. This compiler has applications in both chip level software
development and as a system language for OEM users.

Optional system software therefore includes:

> BASIC
>
> FORTRAN IV
>
> PL/1 (SUBSET)

All MOSTEK software is available through a licensing agreement to
those users who wish to sell MOSTEK software as part of their own
system. Please note that all MOSTEK software is copyrighted and
unauthorized copying is strictly illegal.

(1) Series 3870 (MK 3870, MK 3872, MK 3876), F8, Series 3880 (Z80)

SOFTWARE ORGANISATION
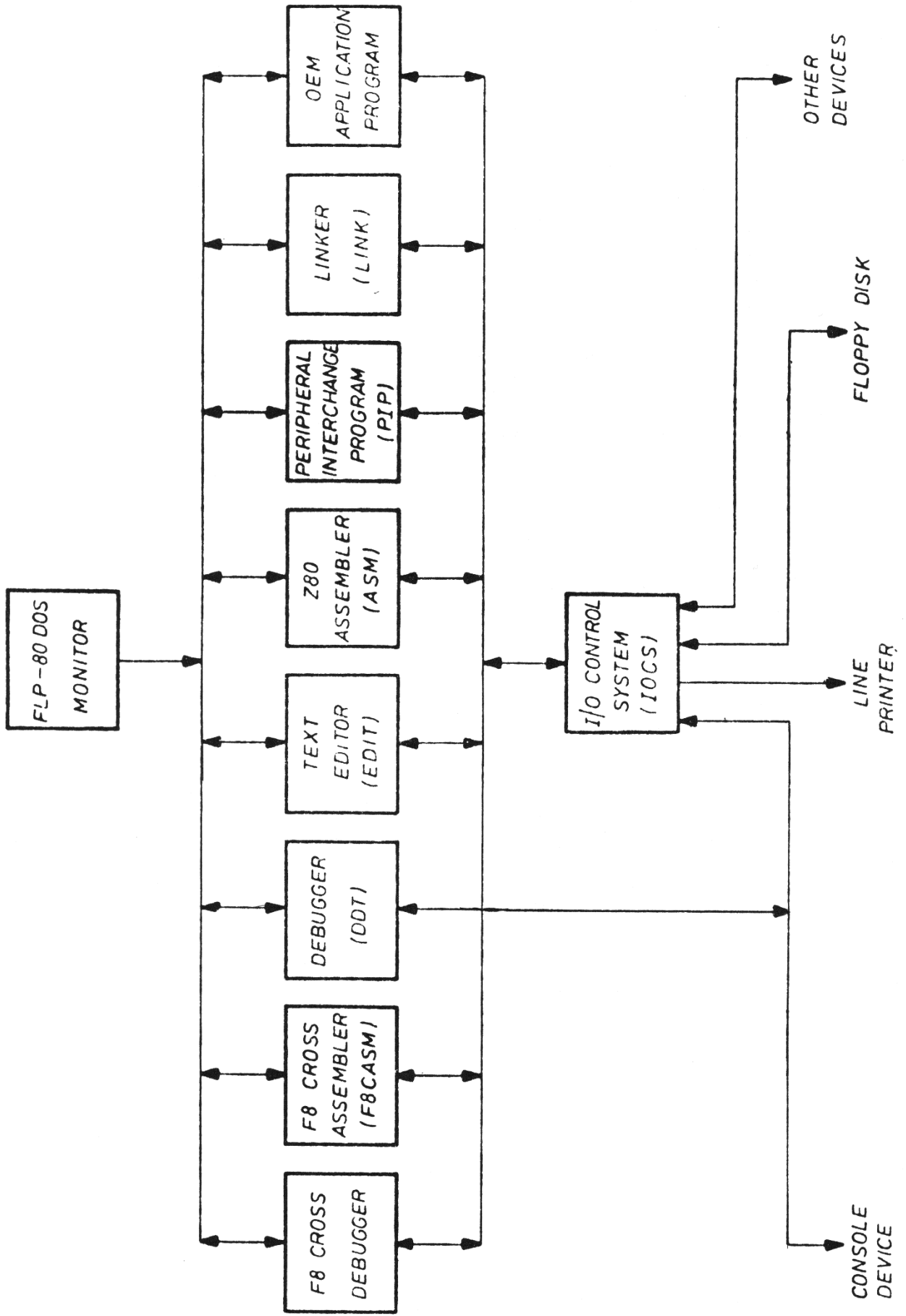
M A N U A L   O R G A N I Z A T I O N

This Manual for the SYS-80F consists of the individual manuals for
the logic boards used in the SYS-80F, the software description for
the system programs which are supplied with the standard system and
the system overview which describes how the various sub-assemblies
function together. Appendix A contains a list of the manuals which
constitute the complete system description.

It is intended that the individual hardware manuals need not normally
be referenced in order to utilize the system. They are provided for
those users who wish to learn more about the details of the operation
of the system. They should also be useful in cases where the user de-
cides to perform his own maintenance. Any user who wishes to configure
his own system will also be referencing these hardware manuals.

This overview contains all of the modifications and interconnections
which are required to make a complete system from the individual cards.
All logic cards in the SYS-80F are standard MOSTEK Z80 based extended
double Eurocard OEM cards. They are used in several of MOSTEK's systems
thus assuring compatability between the SYS-80F environment and the
environment generated by the OEM user who configures his own system
based on these cards.

The software is described primarily by the FLP-80DOS operation manual.
Software in addition to the standard software supplied with the standard
system is described by the operation manual which is always delivered
with the optional software. This overview will not discuss the operating
software. It is very important that the user read carefully the FLP-80DOS
manual before attempting to operate the system. The sections of the
FLP-80DOS manual which should be read before installation is started
are:

        a)   GENERAL DESCRIPTION

        b)   MONITOR

        c)   PIP

Once these three are read, the user should read the installation
section of this overview.

INSTALLATION

The system has only five switches. Three are on the rear panel,
they are:

POWER ON	(LIGHTED WHEN ON)
RESET	(A PUSH BUTTON)
RESET ADDRESS	(A SLIDE SWITCH)

Two are on the CPU card:

RESET	(A PUSH BUTTON)
RESET ADDRESS	(TOGGLE SWITCH)

The two CPU board switches are simply duplicates of the rear panel
switches of the same name. The toggle switch on the CPU board should
always be pointed down (towards the center of the card)

The reset button stops the operation of the CPU.When it is pressed,
the CPU immediately begins execution at the selected reset address
regardless whether or not the reset button is released. The reset
address switch selects whether the CPU begins execution at address 0000
or address E000 (HEX or OE000H (56K or 57344 decimal)) . The MOSTEK
operating system in the standard environment begins at address OE000H.
User RAM begins at address 0. Thus after power on, when the user RAM
contains undetermined information the CPU must begin operation at
the PROM based software located at OE000H.

The reset button on the rear panel is in parallel with the reset
button on the CPU card. If either one is closed, execution will begin
at address OE000H. On the CPU card, 'up' is OE000H and 'down' is 0000.
The rear panel switch should normally be in the OE000H position, the
CPU switch should normally be 'down' allowing the rear panel switch
to define the starting address.

In order to avoid loss of memory contents when reset is active longer
than 2MS, the reset switch causes a reset only on the 'positive' edge
of depression rather than holding the CPU in reset as long as it is
pressed. During reset all CPU action is stopped, including memory
refresh.

There is also a lamp on the CPU card; when it is on, the CPU is
halted. This is not a normal condition when running in the FLP-80DOS
operating system, unless some user executes a halt instruction. It
is important to note that the dynamic memory in the system is
continuously refreshed during the halt state. The user should note
that the CTC is continuously interrupting every 25 MS, as long as
interrupts are enabled.

The system should be connected to a 220 Volt, 50hz power source. The
power source should be moderately noise free, although the SYS-80F
contains a bypass filter to compensate for typical line disturbances.
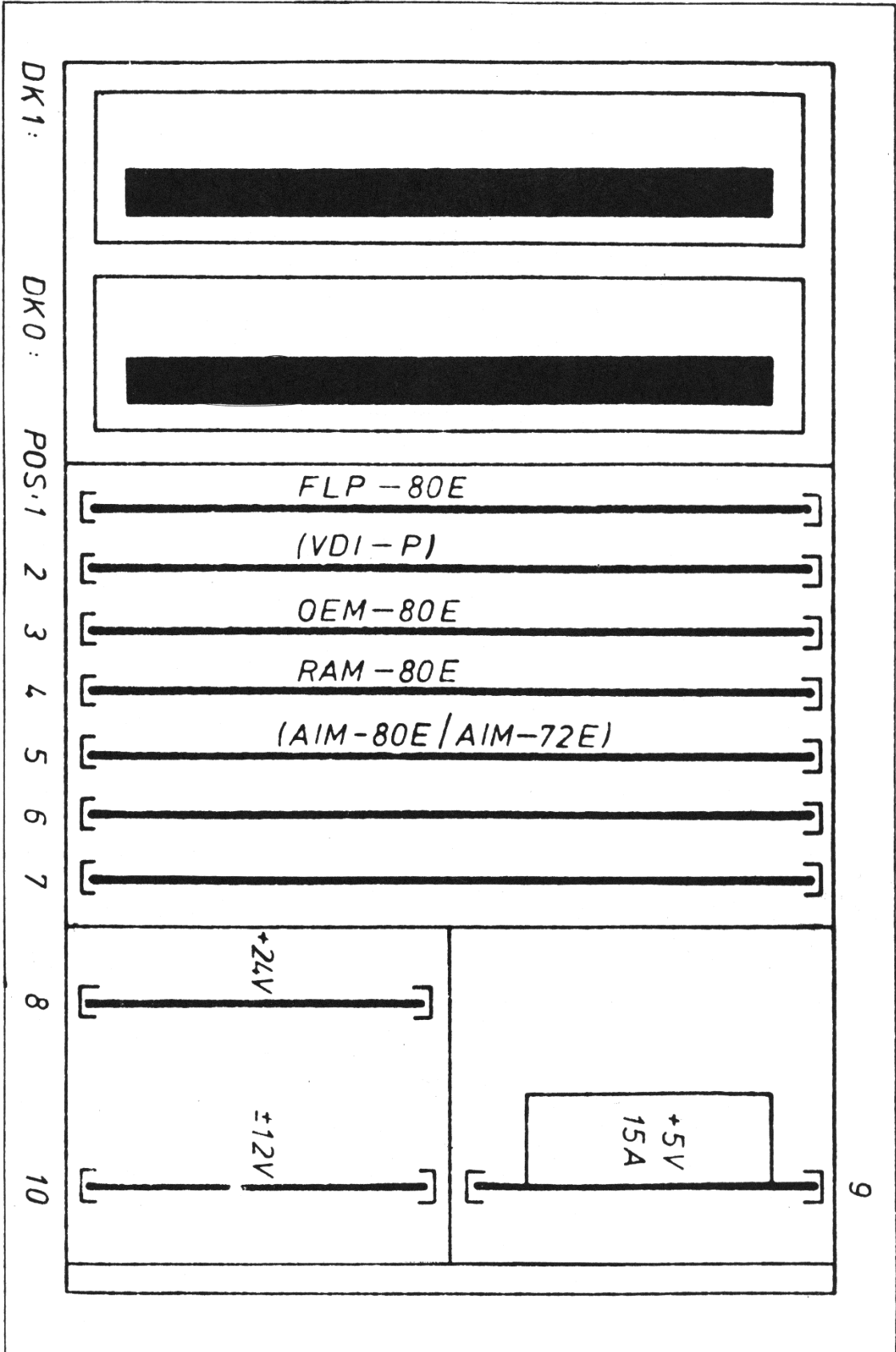
In case the logic cards are removed for inspection Figure 1 should be referenced when replacing the cards to assure proper board placement. Also, all logic cards contain MOS semiconductors which are susceptible to high voltage transients which can be coupled to the MOS circuits during handling. Do not allow any of the cards to be packed in styrofoam or other static causing material. Use only anti-static bags for shipping these cards.

DK1: DK0: POS·1 2 3 4 5 6 7 8 10

FLP — 80E

(VDI — P)

OEM — 80E

RAM — 80E

(AIM-80E / AIM-72E)

+24V

±12V

+5V
15A

9

Fig. 1

VIEW OF THE SYS-80FT DUAL FLOPPY DISK MICROCOMPUTER SYSTEM
SHOWING ALSO OPTIONAL BOARDS AND ACCESSORIES
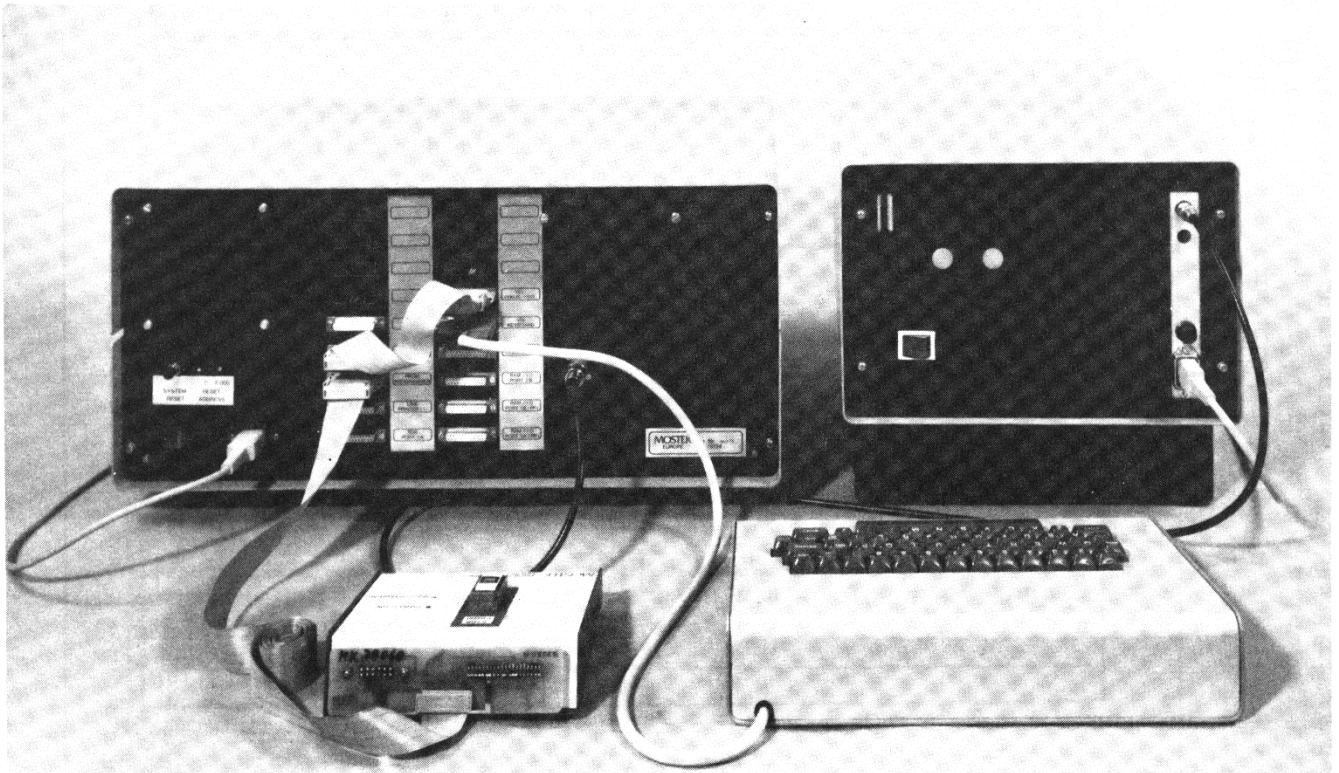
CONNECTION OF SYS-80FT INCLUDING MOSTEK DISPLAY AND KEYBOARD
ALSO SHOWN IS PPG-08 PROM PROGRAMMER.

SYS-80 F/MK 78 134

BACK VIEW

FIG. 2.

The panel includes the following labeled connectors and controls:

- VIDEO CONNECTOR
- VDI-S SERIAL PORT
- VDI KEYBOARD
- LINE PRINTER (2)
- RAM IO PORT 2B
- RAM IO PORT 1B (PP)
- RAM IO PORT 1A (PR)
- CTC
- SERIAL TERMINAL
- PROM PROGRAM.
- LINE PRINTER (1)
- SDB PORT 1A
- SYSTEM RESET
- RESET ADDRESS 0 E000
- FUSE
- OFF / ON
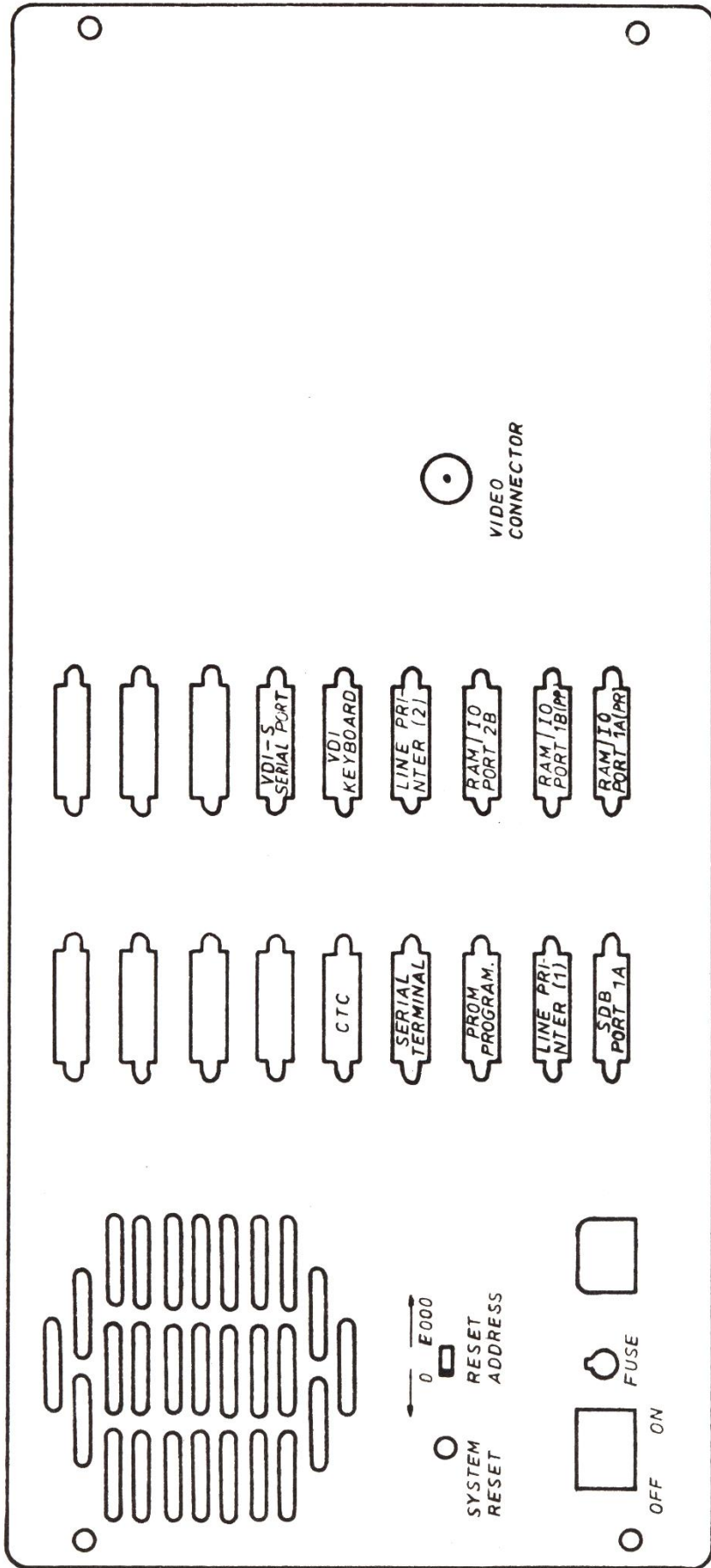
SYSTEM TERMINAL CONNECTION

The system requires a serial ASCII compatible terminal for operation.
Seven standard baud rates between 110 and 9600 are supported. The
25-pin connector is EIA STANDARD compatible and should be capable of
direct one to one connection with your V24 (RS232) terminal. The pinout
of the 25-pin serial terminal connection is shown in Figure 3; it
should be checked before connecting the terminal. Figure 2 shows which
25-pin connector is designated for the terminal interface.

TABLE 1 : SUPPORTED BAUD RATES

110

300

600

1200

2400

4800

9600

The terminal should be programmed for either 7 bit data plus even
parity,or 8 bit data no parity. The system does not check the parity
bit. At 110 baud, 2 stop bits are required; at other baud rates, 1
stop bit is required. Either current loop or V24 (RS232) may be used
at any baud rate. No straps need be modified on any of the system logic
cards in order to accommodate the above mentioned options. Terminal
baud rate is determined by the system after reset when the user enters
'return'. The 'return' character (among others) has a starting bit
pattern which is one bit time wide, the system measures this bit time
and programs the on-board CTC for the proper baud rate. Current loop
inputs are 'or-ed' with V24 (RS232) inputs and serial output appears
on both the current loop and V24 simultaneously. In the standard
environment, the modem control lines are not actually used to control
data movement between the system and terminal, they are initialized
however to the normal active condition immediately after a OE000H reset.

For more information on the serial interface, section 6-I of the
'SDB-80E' operations manual should be referenced.

SYSTEM TERMINAL CONNECTION

OEM-80E PIN	SIGNAL	25 PIN CONNECTOR PIN
	CHASSIS GROUND	1
2a 9	DATA IN V 24	2
2c 3	DATA OUT V 24	3
2a 7	RTS (REQUEST TO SEND)	4
2c 7	CTS (CLEAR TO SEND)	5
2c 6	DSR (DATA SET READY)	6
2c 1	O VOLT (C ROUND)	7
2c 8	C D (CARRIER DETECT)	8
		9
2c 9	CURRENT LOOP INPUT-	10
		11
		12
		13
		14
		15
2c 10	CURRENT LOOP OUTPUT+	16
2a 10	CURRENT LOOP OUTPUT-	17
2a 8	READER STEP-	18
2c 8	READER STEP+	19
2a 6	DTR (DATA TERMINAL READY)	20
		21
1a 12	RESET	22
		23
2a 9	CURRENT LOOP INPUT+	24
		25

Fig. 3

S T A R T I N G   T H E   S Y S T E M

Once power is applied and the terminal is properly connected, reset
may be pressed, followed by the return key on the terminal. If no disk
is inserted in the system the system will automatically enter debug
(DDT). DDT identifies itself with a period '.' . 'DSK ERR' is out-
puted onto the terminal to indicate that the disks were accessed and
found to be not ready.

If a MOSTEK formatted disk is inserted in the right hand side disk
drive (DK0:), then after reset/return the disk 'HEAD LOAD' lamp on
the drive should light, indicating that the disk is being accessed.
After a few seconds the monitor should identify itself and the monitor
prompt character '$' should appear. Please note, the label on the
diskette must be on the right side of the diskette, the diskette must
be pushed in until a 'click' is heard and the door must then be shut.
To remove the diskette press the lever just to the left of the disk
slot.

It is very important that power is not applied or removed while a
diskette is inserted with the door closed. Spurious write pulses may
occur which could destroy data on the disk.

Also, reset should not be pressed during disk accesses.

Any activity on the system beyond reset should only be attempted after
reading the FLP-80DOS manual.

OTHER PERIPHERAL CONNECTIONS

The standard SYS-80F can support the following peripherals without any modification of software or hardware by the user. Other I/O devices must be interfaced by the user.

LINE PRINTER (LP1)

The SYS-80F is designed to support a line or character printer with a parallel interface of the Centronics, Mannesmann or Data Products type. In any case the LP1 connection should be used. This port has the system MNEMONIC 'LP:'. The LP2 connection should only be used when custom I/O drivers have been written by the user.

Data is supplied non-inverted, the strobe to the printer is a negative logic pulse or negative edge strobe. The acknowledge should be a negative logic pulse.

The Centronics type of interface requires a pulse as a data strobe whereas the Data Products requires an edge. Beyond the 8 data lines and 2 handshake lines a printer typically has 2 other control lines which should be tested by the I/O driver before data is sent. On the Centronics models, paper empty (PE) and BUSY must be tested; on the Mannesmann, select (SEL) and BUSY must be tested. Table 2 contains a listing of cable connections between the SYS-80F and typical printers. Note that PE, BUSY and SEL should all be normally logic 0 signals.

PROM PROGRAMMER

The MOSTEK PPG-08 and PPG-16 are both compatible with the 'PROM PROGRAMMER' connection on the SYS-80F. For more details see the PPG-08(16) manual and the system components section.

The PPG-08 programs 2708 type PROMS, the PPG-16 programs either 2708, 2758 or 5 Volt 2716 PROMS.

PAPER TAPE PUNCH

The 'RAM I/O PORT 1B' connection can be used for interfacing the system to a paper tape punch. Protocol is identical to that specified in section 6-II of the 'SDB-80E SOFTWARE DEVELOPMENT BOARD OPERATIONS MANUAL' which is included with this system. The system mnemonic for the paper tape punch is 'PP:' The I/O port used in 0AAH on the RAM-80B card.

PAPER TAPE READER

A paper tape reader may be connected to 'RAM I/O PORT 1A' and may be referenced by the operating system through the mnemonic 'PR:'. Protocol is described in the same manual and section as the paper tape punch. The I/O port used in 0A8H on the RAM-80BE card.

TABLE 2 : LINE PRINTER CABLE CONNECTIONS

SYS-80F 25 PIN	MANNESMANN 50 PIN	CENTRONICS 36 PIN	DATA PRODUCTS 2310	
1	1	2	B	DATA 0-7
2	2	3	F	
3	3	4	L	
4	4	5	R	
5	5	6	V	
6	6	7	Z	
7	7	8	(N)	
8	8	9	-	
9	-	-	(J)	STROBE
10	12	10	E	DONE
11	11	1	-	C STROBE
12	37	12	-	PE/SEL
13	13	11	-	BUSY
14	9	20	-	GND
15	18	21	D	GND
16	19	22	J	
17	20	23	N	
18	21	24	T	
19	22	25	X	
20	23	26	(B)	
21	24	27	(K)	
22	25	28	(M)	
23	26	28	C	
24	27	29		
25	28	30		

The Centronics cable is available from MOSTEK. Part Number is MK78098

CARD READER

A card reader may be connected to the RAM I/O PORT 2A and the line printer 2 connection. This is a non-standard interface, more information is included in the RAM-80BE section.

SILENT 700

When 300 baud is detected as the terminal speed a delay after each return sent from the system is automatically added. This means that a silent 700 type printer which requires up to 195 MS delay after return can be used with the system without difficulty.

When 1200 baud is detected the system automatidally inserts a 3-character delay after each character, and 195 MS after return. This allows a silent 700 operating under the 1200 baud option to function correctly.
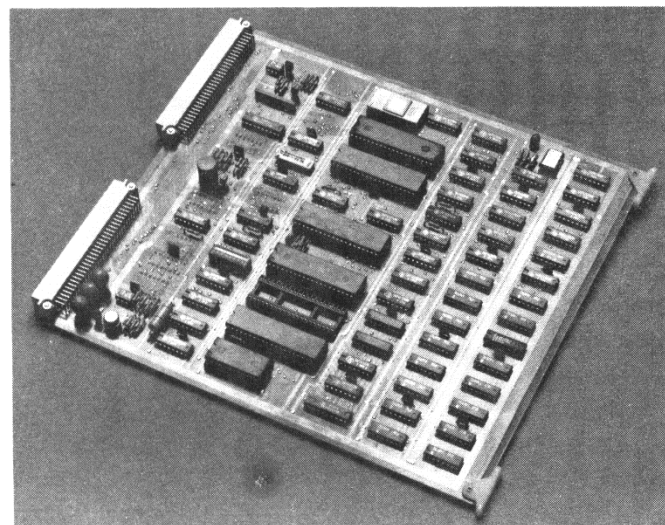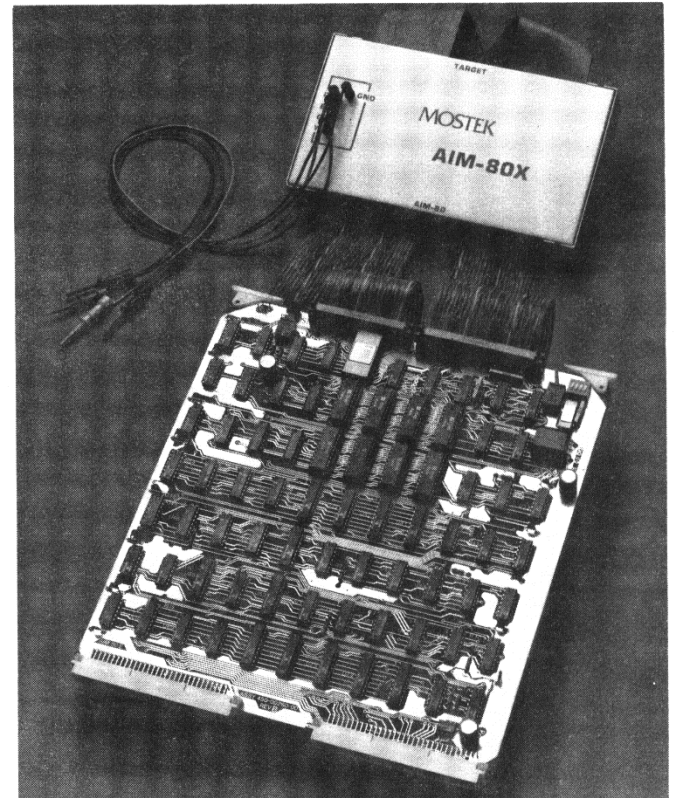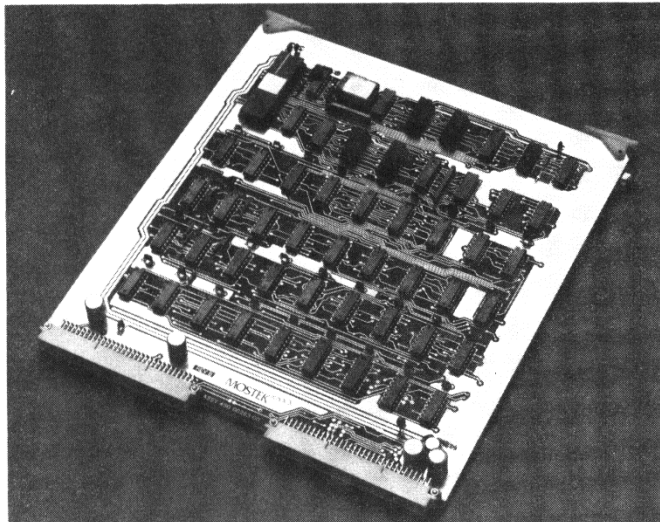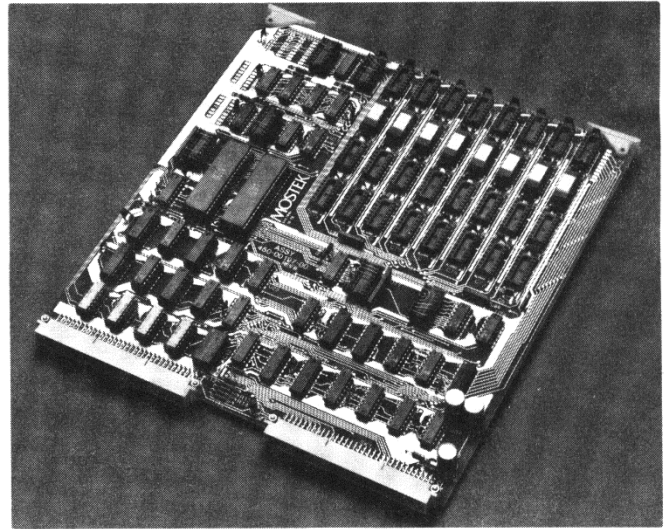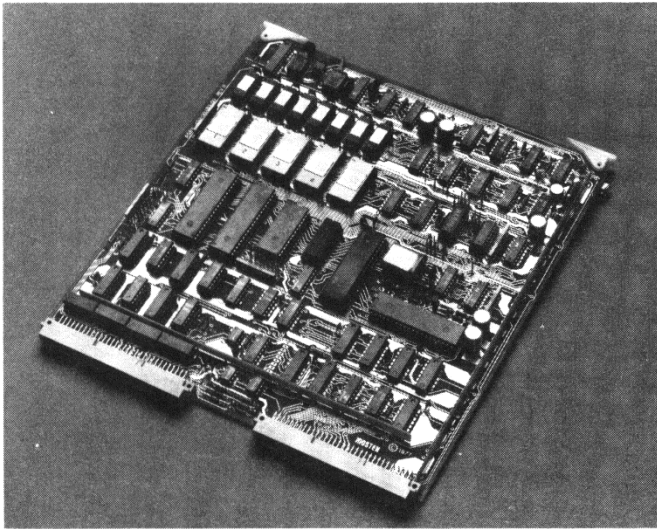
1	4		1- OEM - 80E
2	5		2- FLP - 80E
3			3- VDI - S / P
			4- RAM - 80BE
			5- AIM - 80E

SYSTEM LOGIC CARDS

SYSTEM COMPONENTS

OEM - 80E CPU CARD

1) MEMORY MAPPING

The version of the OEM-80E which is used in the SYS-80F has 16K bytes of RAM memory and 4K bytes of PROM memory. The RAM is located at address 0-3FFFH and the PROM is located at address 0E000-0EFFF. The decoding PROMS U31 and U32 are modified from those supplied with the standard OEM-80E. The truth table for these PROMS is shown in figures 4 and 5. The jumpers on the card which are different from the standard OEM-80E are:

REMOVED	ADDED
E30-31	
E32-33	
E34-35	
E36-37	
E5 - 6	E5 -54
E55-56	
E7 - 8	E8 - 9
E10-11	E11-12
E13-14	E14-15
E16-17	E17-18
E41-42	E40-41
E44-45	E43-44
E47-48	E47-46
E50-51	E49-50

With this modification socket 1 (U24) is address E000, socket 2 (U25) is E400, socket 3 (U26) is E800 and socket 4 (U27) has addressed EC00. In the standard SYS-80F only sockets 1, 2, 3, 4 are used.

The strapping shown in the first group sets up the addressing ranges. The second group provides the +12 Volts and GND required by the 2708 type PROMS used in the system. The remaining socket may also be used to provide an additional 1K bytes of PROM memory. Socket 5 (U28) may be stuffed with a 2708 if the proper power jumpers are modified.

An important note is that socket 5 may only be used if AIM-80 is not used.

2) PPG-08/16 CONNECTION

This interface is unchanged from the standard OEM-80E PIO number 2
connection. The 1K Ohm register network (U74) has been replaced with
a 12K Ohm network. Figures 6 and 7 show this port.

3) LP1 LINE PRINTER INTERFACE

Port DO is the data output port. Whether or not the ready signal
from this port is used, the strobe input is used to generate an inter-
rupt each time the printer has acknowledged a character by giving a 'DONES'
signal. For checking status of the printer and for generating the strobe
for the Centronics type pulse interface, port D2 is used. Port D2 has been
modified to have 4 bits input and 4 bits output. To convert bits 4 - 7
into inputs, the 7408 (U50) has been replaced by a 7402. The following
jumpers have been changed:

REMOVED	ADDED
E69-70	E66-67
	E82-83

Figures 8, 9 and 10 show this port.

4) CTC USAGE

Of the 4 channels on the CTC 2 are used in the standard system and
therefore are not available to users. Channel 0 is the baud rate gene-
rator for the on-board UART and channel 1 is used to monitor terminal
requested escapes (CONTROL X, CONTROL C); it interrupts every 25MS.
If the floppy disk controller (FLP-80) is used under interrupt control
(OPTIONAL), then CTC channel 3 is also used. Figure 11 shows the pinout
of the CTC connector.

R A M   -   8 0 B E
----

1)   32K VERSION

The 32K byte system has 16K on the CPU card and 16K on the RAM card.
The CPU RAM has addresses 0-3FFFH. The RAM card has addresses
4000H - 7FFFH. To properly do this, header U3 should be empty except
for a bridge between 3 and 14. 8-MK4116 RAMS should be inserted in
sockets U44-U51.

2)   48K VERSION

The 48K byte system has 16K on the CPU card and 32K on the RAM card.
The CPU addresses are 0-3FFFH. The RAM card addresses are 4000H-0BFFFH.
Header U3 should be empty except for 2 jumpers 2-15 and 3-14.
16 MK4116 RAMs should be inserted in sockets U44-U59.

3)   56K CONTINUOUS, 58/60K TOTAL RAM MEMORY VERSION

56K bytes of continuous RAM is the maximum amount available on the
SYS-80F. In the SYS-80F, table 3-7 of the RAM-80BE operations manual
does not apply. In this configuration 48K bytes will be on the RAM
card between addresses 0-0BFFFH. On the CPU will be 8K bytes between
0C000H and 0DFFFH. An additional 2K is available between 0F800H-0FFFFH.
If AIM-80 is not used then 2K bytes more may be programmed at addresses
0F000H-0F7FFH. The 256x8 RAM (U39) must be removed.

On the CPU card (OEM-80E) the following jumpers should be moved:

REMOVED	ADDED
E25-27	E26-27
	E30-27 ONLY OF THERE IS NO 'USER
	PROM' AND NO AIM-80E

On the RAM card, header U3 should have jumpers only between 4 - 13,
3-14, 2-15; 24 MK4116 RAMs should be inserted into sockets U36-59.

4)   EXPANDED, MEMORY MAPPED VERSION

Please consult MOSTEK for information on systems with more than
60K bytes of on-line RAM. In the standard SYS-80F 204K bytes of RAM
is possible. With an expanded chassis, 780K bytes is possible.

5) I/O PORTS ON THE RAM-80BE

There are three groups of I/O ports on the card. The standard port connections are used:

        AO - A3   =   MEMORY MAPPING CONTROL

        A8 - AB   =   PIO NUMBER 1

        AC - AF   =   PIO NUMBER 2

To use PIO 1 as an interface to a reader or punch the configuration of headers and straps is not changed from that shipped with standard RAM-80BE's. The port addresses are:

PORT	FUNCTION (TYPICALLY)
A8	READER DATA
A9	READER CONTROL
AA	PUNCH DATA
AB	PUNCH CONTROL

Figures 12 + 13 show the cable wiring and the proper header and jumper options for using PIO N° 2 (Port AC - AF)

Figures 14 - 17 show the pinout of the 4 port connectors. Note that Ports 1A, 1B and LP2 have extra data lines from port 2B (OAEH) in order to allow I/O devices which need more than 8 data and 2 control lines to be used. Note that if these extra lines are used, port OAEH must have the 7408 (U24) replaced by a 7402 if the input signals are to be used. If this is done, PIN 11 of U70 must be strapped to PIN 5.

F L P   -   8 0 E

No modification to this card is required for the standard systems.
For systems with interrupt driven disk control the jumper E25-26
must be connected. The backplane connection is already made to
connect SK2A3 to the CTC channel 3 on the CPU card.

The disk drives used with the FLP-80E care are Shugart 800-2.
These drives are standard except write protect is included. The
jumpers closed on the disk units themselves are:

A, B, C, T2, HL, Y, 800

In addition, DS1 is closed for the first drive (DK0:)
and DS2, T1, T3, T4, T5 and T6 are closed on the second drive (DK1)

All other jumpers are open.

P O W E R   C O N N E C T I O N S

The power supplies used in the SYS-80F are based on the single eurocard.
Schematics of the power supply system are included.

OPTIONAL SYSTEM COMPONENTS

AIM - 80E

When this card is used the reset address must be set to 0000.
The card will not function if the reset address is 0E000H.

AIM - 72E

No modifications are required to this card.

VDI - P/S

To use either of the SYS-80F compatible video controller cards, cable
MK 78 090 must be installed in the system. All programming of port
addresses and operating modes is done by SK2, so no jumpers need be
installed on the card. If the VDI-S serial version is used a
one-to-one cable must be installed between the 'VDI-S Serial Port'
and the 'System Terminal' connection. One of the baud rates must be
selected using the slide on board. (Position 2 is 9,600 baud.)

On the VDI-P parallel version the serial port is not used, ports
A4-A7 are used as the address for a MK3881 PIO.

> Figures 18 - 20 show the cable connections.
> Note that since this connector must carry
> +5 power, the user must be careful to avoid
> accidental insertion of an incorrect peripheral
> connector.

TRUTH TABLE FOR 32×8 PROM   U 31

	A15	A14	A13	A12	A11	ADDR. (HEX)	OUTP. (HEX)	9	7	6	5	4	3	2	1
F800	1	1	1	1	1	1 F							0		0
F000	1	1	1	1	0	1 E						0			
	1	1	1	0	1	1 D		0							
E000	1	1	1	0	0	1 C		0							
	1	1	0	1	1	1 B								0	
D000	1	1	0	1	0	1 A								0	
	1	1	0	0	1	1 9								0	
C000	1	1	0	0	0	1 8								0	
	1	0	1	1	1	1 7									
	1	0	1	1	0	1 6									
	1	0	1	0	1	1 5									
	1	0	1	0	0	1 4									
	1	0	0	1	1	1 3									
	1	0	0	1	0	1 2									
	1	0	0	0	1	1 1									
	1	0	0	0	0	1 0									
	0	1	1	1	1	0 F									
	0	1	1	1	0	0 E									
	0	1	1	0	1	0 D									
	0	1	1	0	0	0 C									
	0	1	0	1	1	0 B									
	0	1	0	1	0	0 A									
	0	1	0	0	1	0 9									
	0	1	0	0	0	0 8									
	0	0	1	1	1	0 7			0				0		
3000	0	0	1	1	0	0 6			0				0		
	0	0	1	0	1	0 5			0				0		
2000	0	0	1	0	0	0 4			0				0		
	0	0	0	1	1	0 3			0				0		
1000	0	0	0	1	0	0 2			0				0		
	0	0	0	0	1	0 1				0			0		
0000	0	0	0	0	0	0 0				0			0		

Pin numbers (bottom): 13 12 11 10 14

Output column functions:
- O.S. PROM
- USER PROM
- O.S. RAM
- 15K RAM A } USER RAM
- 15K RAM B }

USER PROM IS ONLY AVAILABLE IF AIM-80 IS NOT USED.

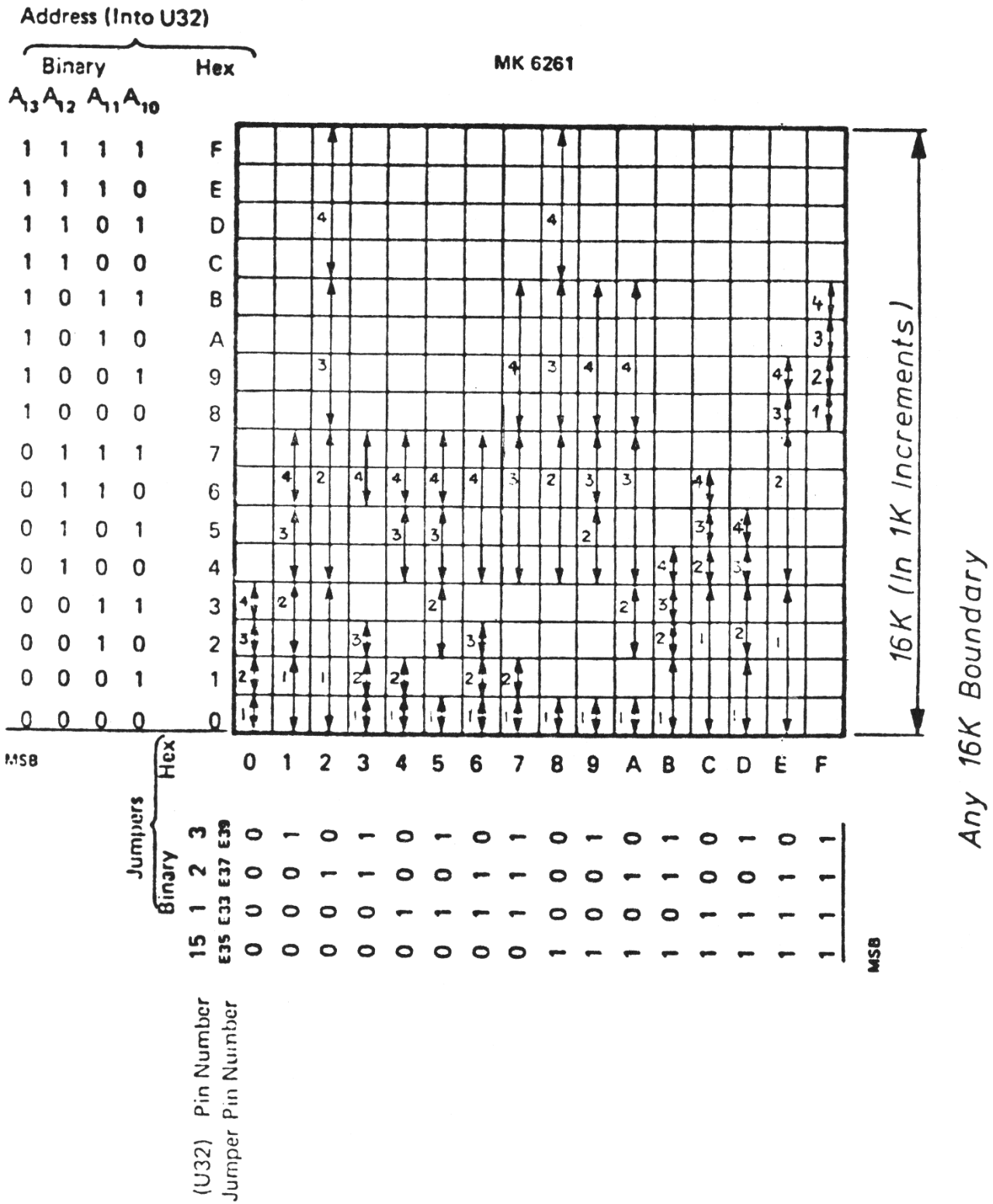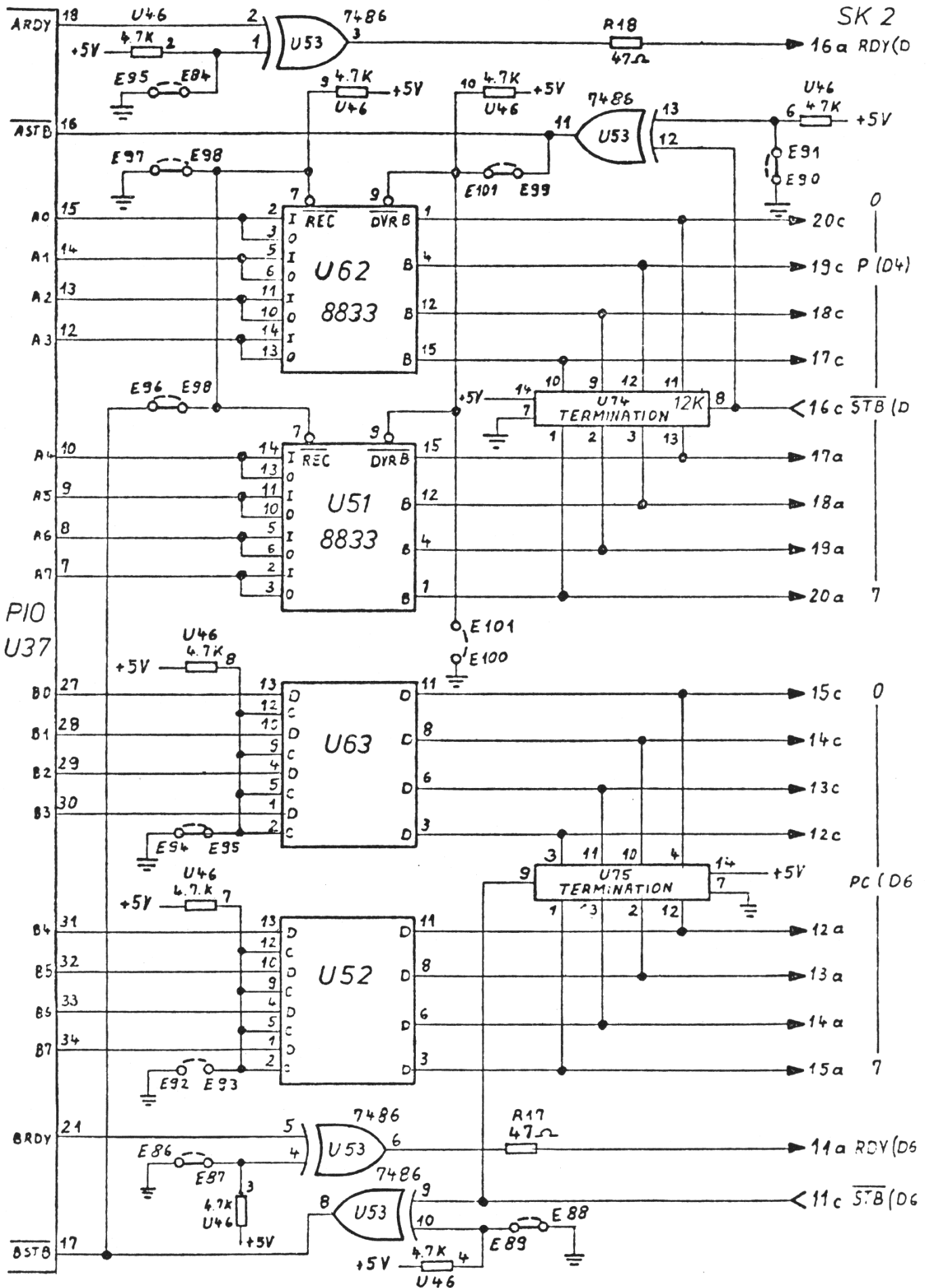## EACH HORIZONTAL LINE IS 2K BYTES   FIG. 4

Figure 5

PROM PROGRAMMER

PROM PROGRAMMER

OEM-80E PIN	SIGNAL	25 PIN CONNECTOR
2c 20	DATA BIT 0	1
2c 19	1	2
2c 18	2	3
2c 17	3	4
2a 17	4	5
2a 18	5 PORT D4	6
2a 19	6	7
2a 20	7	8
2a 16	READY	9
2c 16	STROBE	10
2c 13	DATA BIT 2	11
2c 12	3	12
2a 12	4	13
2a 13	5	14
2a 14	6	15
2a 15	7 PORT D6	16
2c 11	STROBE	17
1a 6	+ 12 VOLT	18
1a 4	+ 5 VOLT	19
2c 15	DATA BIT 0 PORT D6	20
2c 14	DATA BIT 1 PORT D6	21
	BLOCKED	22
1a 1,2	0 VOLT	23
2a 11	READY PORT D6	24
1a 3	- 12 VOLT	25

Fig. 7

LINE PRINTER 1 (ODOH)

OEM-80E PIN	SIGNAL	25 PIN CONNECTOR
2c 32	DATA BIT 0	1
2c 31	1	2
2c 30	2	3
2c 29	3	4
2a 29	4 PORT D0	5
2a 30	5	6
2a 31	6	7
2a 32	7	8
2a 28	D STROBE	9
2c 28	(STB) DONES	10
°2c 27	C STROBE BIT 0	11
°2a 24	BIT 4 PORT D2	12
°2a 25	PE BUSY BIT 5	13
		14
		15
		16
2c 2	0 VOLT	17
		18
		19
		20
		21
		22
		23
		24
-- port 1A also	0 VOLT ←	25

Fig. 8

- 24 -

LP1 LINE PRINTER

Fig. 9

Fig. 10

SDB PORT 1A

OEM-80E PIN	SIGNAL	25 PIN CONNECTOR
°2c 27	DATA BIT 0	1
2c 26	1	2
2c 25	2	3
2c 24	3	4
°2a 24	4 (PORT D2)	5
°2a 25	5	6
2a 26	6	7
2a 27	7	8
°2a 23	READY	9
2c 23	STROBE	10
		11
		12
		13
2a 1	0 VOLT	14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
	0 VOLT ←	25

° used on LP Port also

Fig. 11

CTC CONTROL LINES

OEM-80E PIN	SIGNAL	25 PIN CONNECTOR
2a 3	CK/TG 3B (also to FLP-80)	1
		2
2a 5	CK/TG 2B	3
2a 4	CK/TG 1B	4
2c 5	ZC/TO 2B	5
		6
2c 4	ZC/TO 1B	7
	—	8
		9
		10
		11
		12
		13
		14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
		25

CABLE CONNECTION FOR THE
M2OO CARD READER

25-PIN CONNECTOR		SIGNAL NAME	M 2OO
RAM-I/O PORT 2B-8	B7	DATA 12	A
-7	B6	11	B
-6	B5	O	C
RAM-I/O PORT 2A			
(LP2)-1	AO	1	D
-2	A1	2	K
-3	A2	3	L
-4	A3	4	M
-5	A4	5	N
-6	A5	6	U
-7	A6	7	V
-8	A7	8	Y
PORT 2B-5	B4	9	Z
2A-1O	ASTRB	IM	AA
2B-1O	BSTRB	IM	AA
-4	B3	READY	BB
-2	BI	ERROR	HH
-1	BO	MOCK	KK
2A-9	ARDY	PC	LL
2B-3	B2	BUSY	MM
2A 14-25		GND	CC
2B 14-25		GND	EE
			NN
			RR
			SS
			TT

2 25-PIN-CONNECTORS ARE REQUIRED

Fig. 12

IC, JUMPER AND HEADER

MODIFICATIONS REQUIRED FOR THE M200
DOCUMATION CARD READER

REMOVE	ADD
	E5 – E6
	U70 – 5:12
U70 – 2:15	U70 – 6:11
U70 – 3:14	
U29 – 7408	U29 – 7402
U24 – 7408	U24 – 7402

Fig. 13

RAM I/O PORT 1A

RAM-80BF PIN	SIGNAL	25 PIN CONNECTOR
2c 32	DATA BIT 0	1
2c 31	1	2
2c 30	2	3
2c 29	3	4
2a 29	4 — PORT A8	5
2a 30	5	6
2a 31	6	7
2a 32	7	8
2a 28	RDY	9
2c 28	STB	10
°2c 14	OUTPUT (BIT 1)	11
°2a 14	INPUT (BIT 6) — PORT AE	12
°2a 15	INPUT (BIT 7)	13
2a 2	0 VOLT	14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
	0 VOLT	25

°used on Port 2B also

Fig. 14

RAM I/O PORT 1B

PIN RAM-80BE	SIGNAL	25 PIN CONNECTOR
2c 27	DATA BIT 0	1
2c 26	1	2
2c 25	2	3
2c 24	3	4
2a 24	4 — PORT AA	5
2a 25	5	6
2a 26	6	7
2a 27	7	8
2a 23	READY	9
2c 23	STROBE	10
		11
		12
		13
2c 2	0 VOLT	14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
	0 VOLT	25

Fig. 15

RAM I/O PORT 2B

RAM-80BE PIN	SIGNAL		25 PIN CONNECTOR
°2c 15	DATA BIT 0		1
°2c 14	1		2
2c 13	2		3
2c 12	3		4
2a 12	4		5
°2a 13	5	PORT AE	6
°2a 14	6		7
°2a 15	7		8
			9
2a 11	READY		10
2c 11	STROBE		11
			12
2c 1	0 VOLT		13
			14
			15
			16
			17
			18
			19
			20
			21
	0 VOLT ←		22
			23
			24
			25

° used on ports 1A, 2A also

Fig. 16

RAM I/O PORT 2A
(Line printer type 2)

RAM-80BE PIN	SIGNAL		25 PIN CONNECTOR
2c 20	DATA BIT 0		1
2c 19	1		2
2c 18	2		3
2c 17	3		4
2a 17	4		5
2a 18	5	PORT AC	6
2a 19	6		7
2a 20	7		8
2a 16	READY		9
2c 16	STROBE		10
°2c 15	C STROBE (BIT 0)	PORT AE	11
°2c 12	PE (BIT 4)		12
°2a 13	BUSY (BIT 5)		13
2a 1	0 VOLT		14
			15
			16
			17
			18
			19
			20
			21
	0 VOLT ←		22
			23
			24
			25

° used on Port 2B also

Fig. 17

KEYBOARD
VIDEO DISPLAY INTERFACE (VDI)
(used on terminal version)

VDI PIN	SIGNAL	25 PIN CONNECTOR
2a 17	DATA BIT 0	1
2a 18	1	2
2a 19	2	3
2a 20	3	4
2a 21	4	5
2a 22	5	6
2a 23	6	7
		8
		9
2c 25	DATA STROBE ACTIVE EDGE	10
2a 25	DATA STROBE	11
2a 3	RESET KEY	12
2a 27	SPEAKER	13
2c 22	UPPER CASE / LOWER CASE	14
2a 1	0 VOLT	15
2c 1	←	16
	0 VOLT ←	17
		18
		19
2a 8	+ 5 VOLT	20
	0 VOLT	21
		22
	0 VOLT ←	23
	0 VOLT	24
		25

Fig. 18

SERIAL PORT
VIDEO DISPLAY INTERFACE (VDI)
(use one-to-one cable to system terminal connector)
Not used if VDI-8 is used.

VDI PIN	SIGNAL	25 PIN CONNECTOR
		1
		2
		3
		4
		5
		6
		7
		8
		9
2c 32	SO- (SERIAL OUT-)	10
		11
		12
		13
		14
		15
		16
2c 31	SI - (SERIAL IN-)	17
2a 31	SI + (SERIAL IN+)	18
		19
		20
		21
		22
		23
2a 32	SO+ (SERIAL OUT+)	24
		25

Fig. 19

SK2 c4 ⌐
SK2 a4 ⌐

50Hz REFRESH RATE

a1
SK2 a2 ⌐
c1
SK2 c2 ⌐

SK2 a5 ⌐
a6
c5
c6

VIDEO
CONNECTOR

SK2 c10
c11
c13
c17
c25

} PORTS
A4—A7

VDI—P
SK2

FIG. 20

Video Display Interface   Connections for Parallel Drive
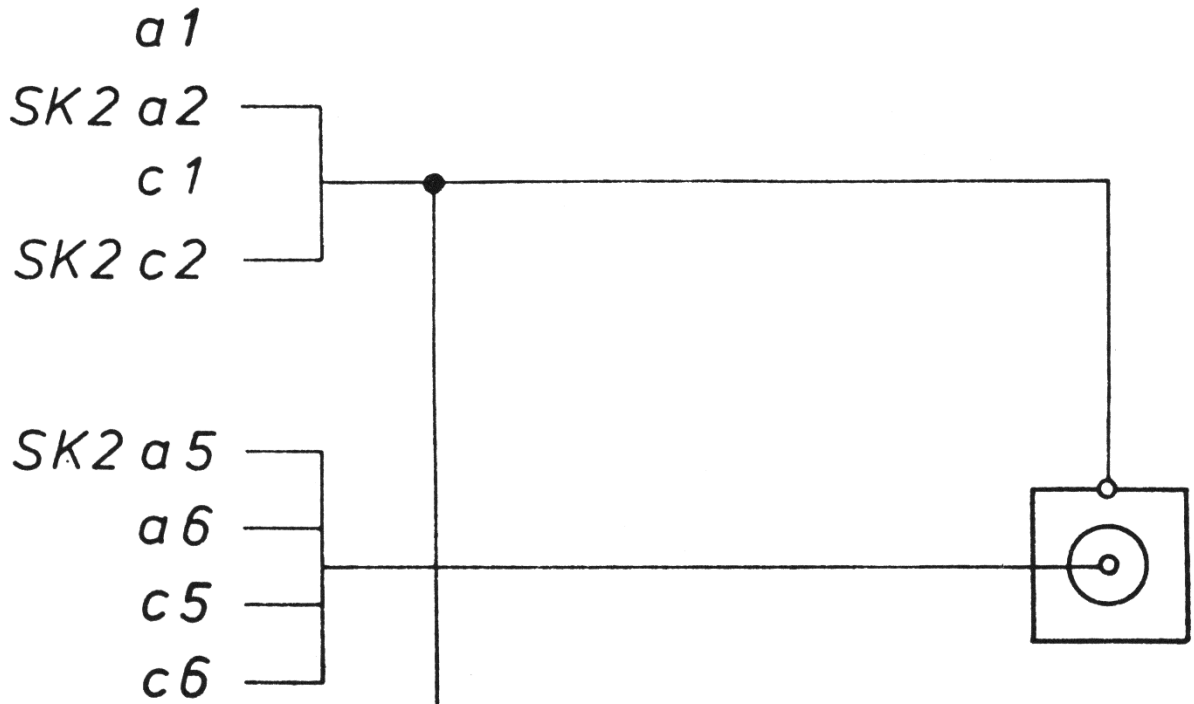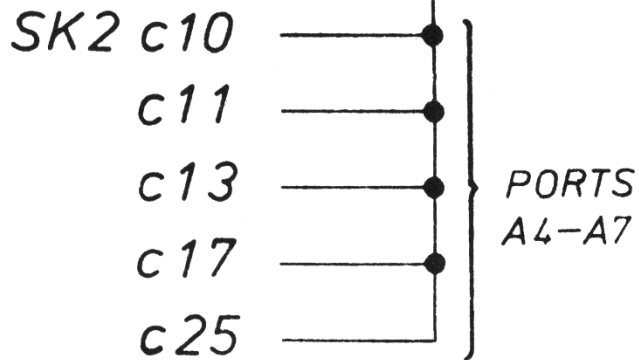
SYS-80F POWER SYSTEM
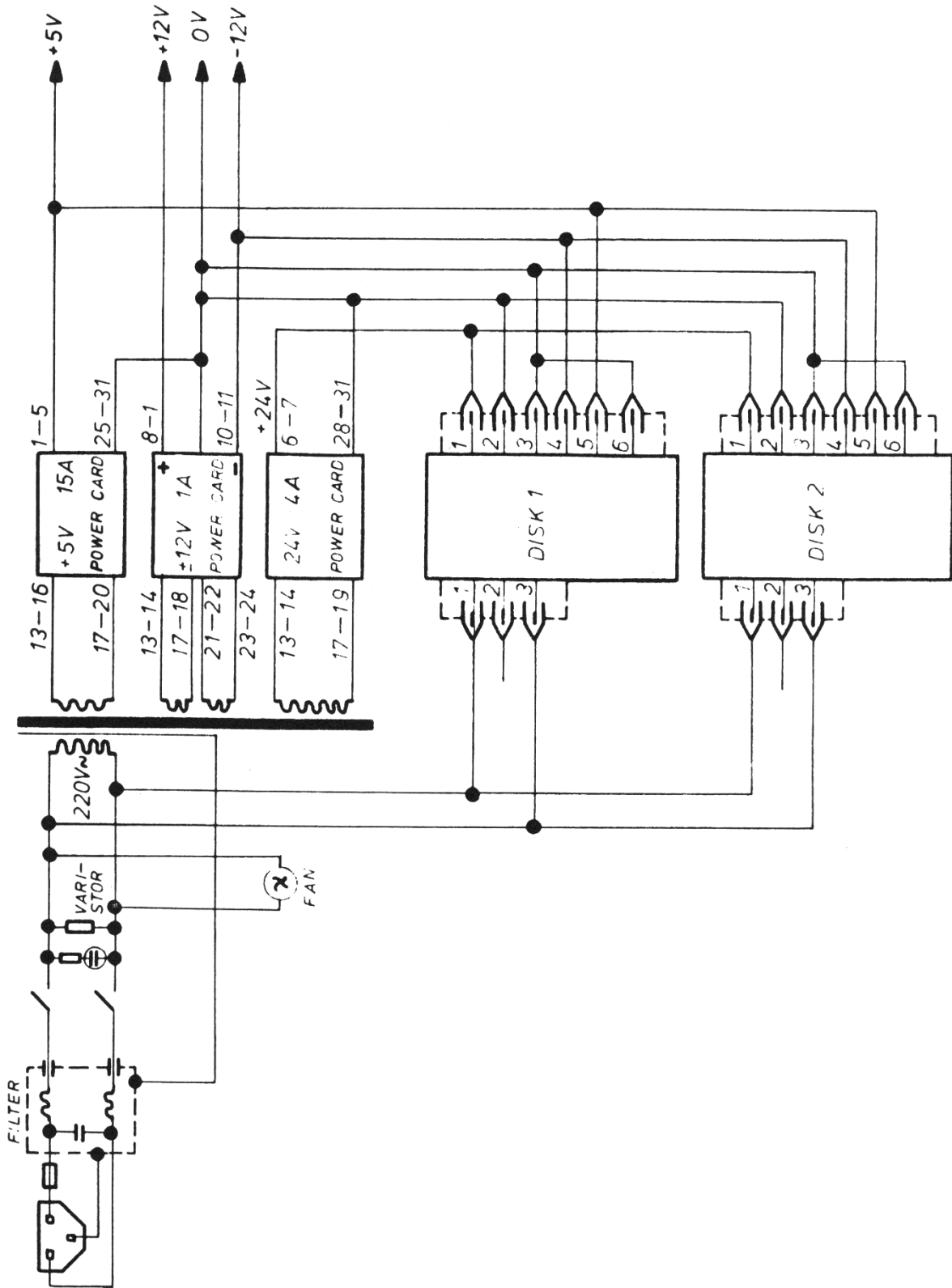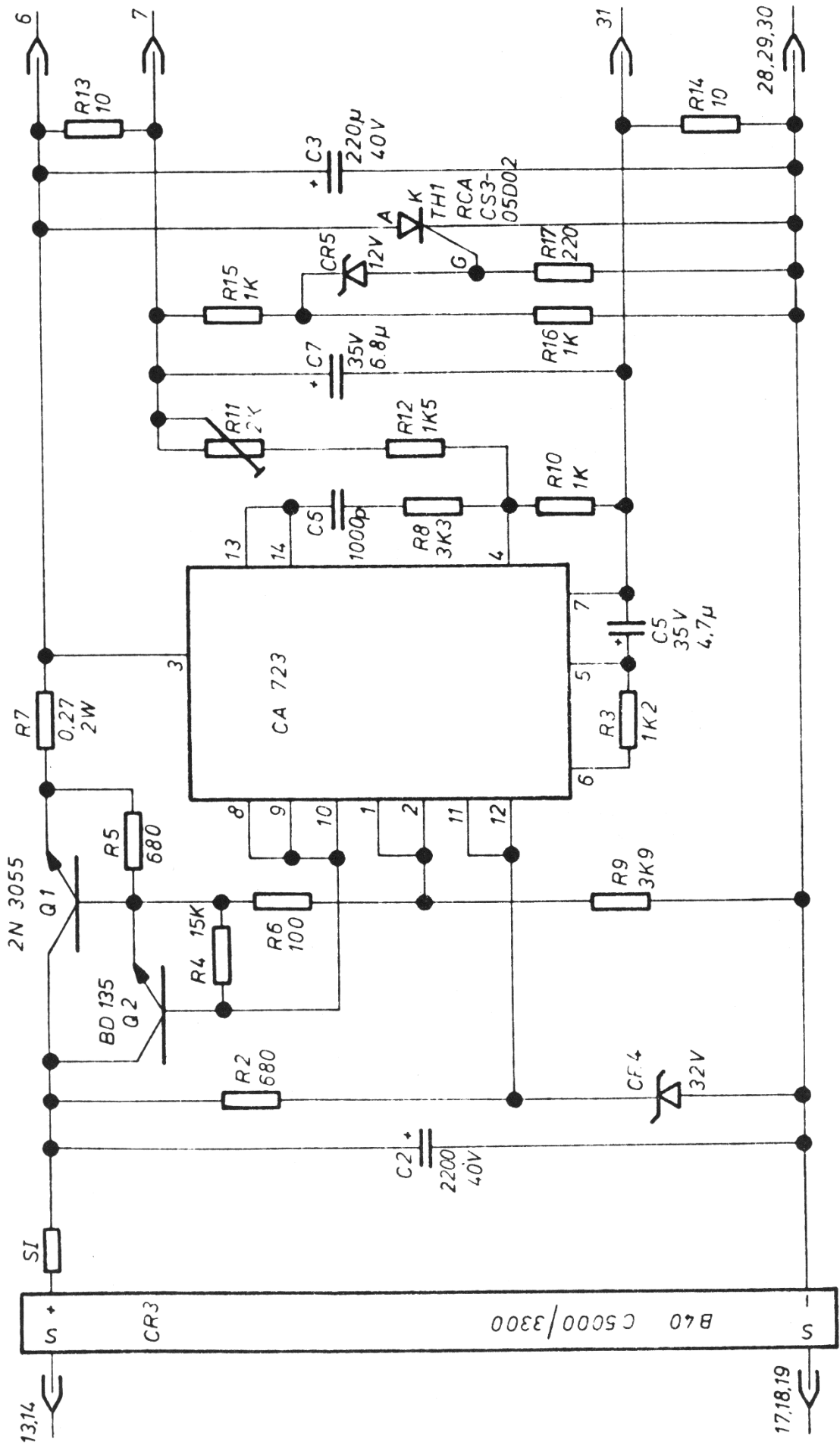
Fig. 22   Power Supply Module

MK78093   24V
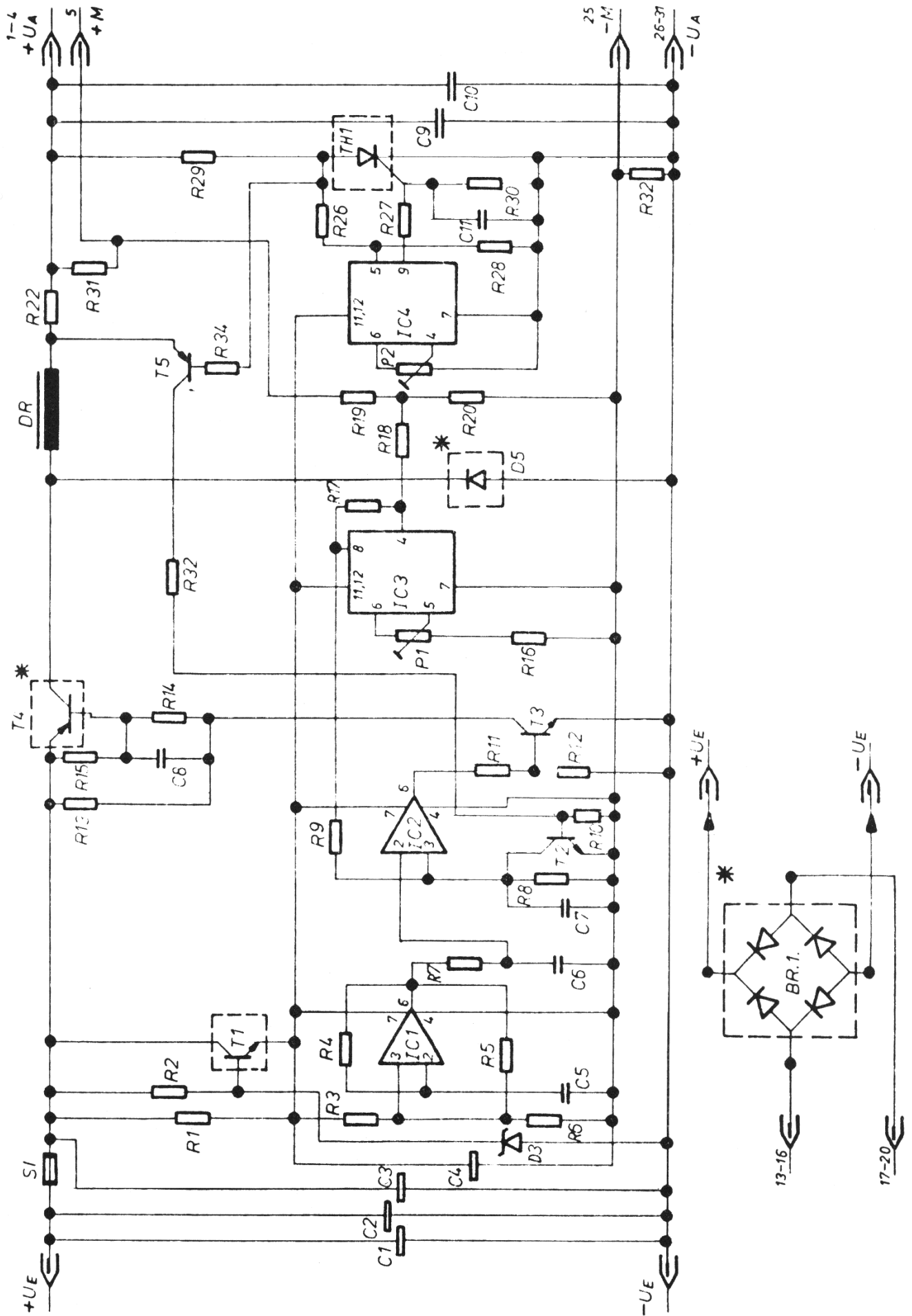
Fig. 23   Switched Power Supply

MK78091   5V   15A
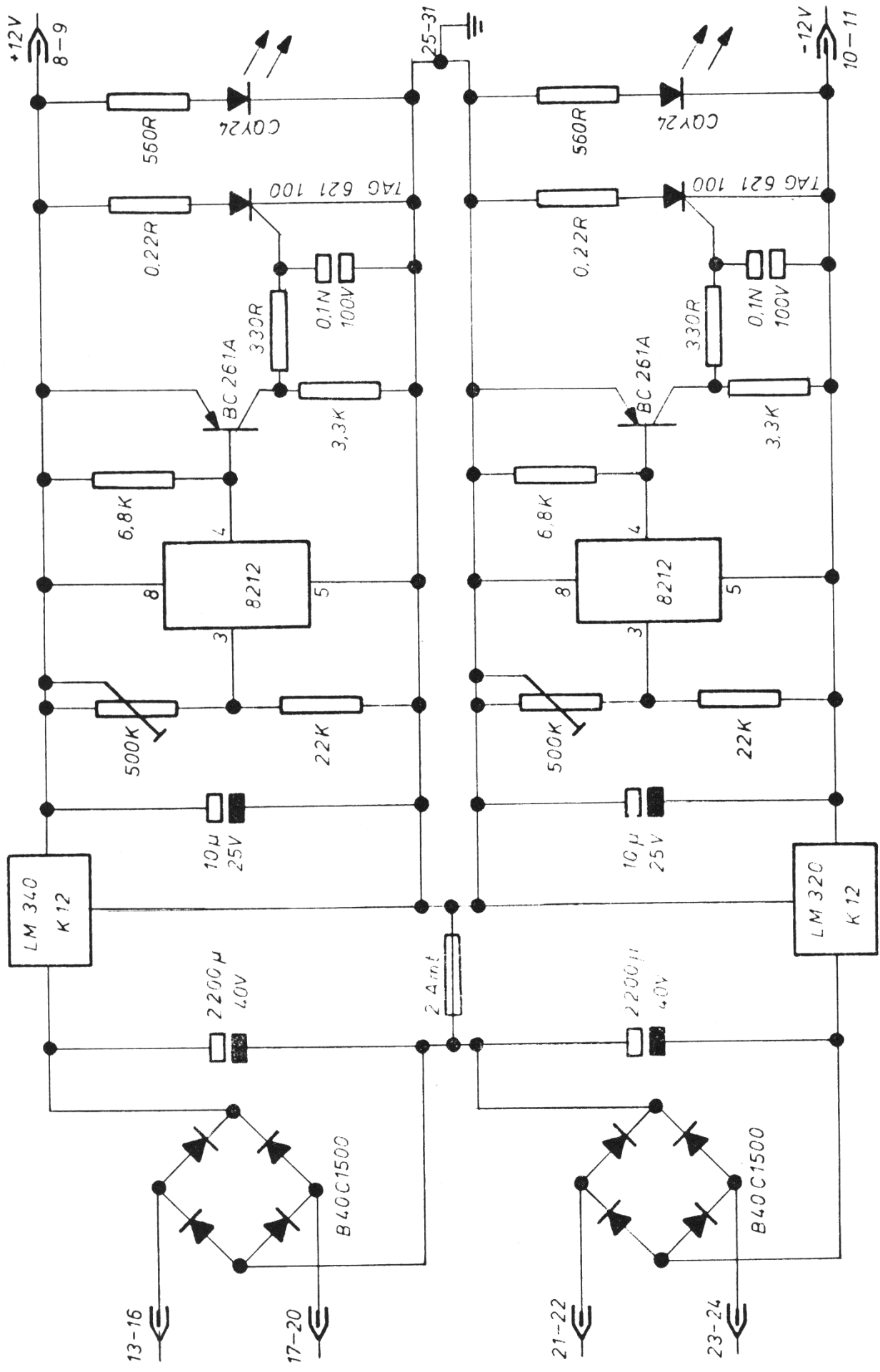
Fig. 24   Power Supply Module

MK78092   12V

APPENDIX A   CONTENTS OF SYS-80F OPERATIONS MANUAL

If additional copies of any of the manuals included in this
package are required, please order from your local MOSTEK
representative.

OPERATION MANUALS :

OEM-80E   MK 78 548

RAM-80BE   MK 78 555

FLP-80E   MK 78 561

FLP-80DOS   MK 78 557

CPU   MK 78 505

PIO   MK 78 506

CTC   MK 78 564

OTHER MANUALS INCLUDED:

Z80 PROGRAMMING GUIDE   MK 78 515

Z80 POCKET REFERENCE   MK 78 516

Optional modules for the SYS-80F are not discussed in the above
literature. The following manuals are not included with the SYS-80F
but can be obtained from your local MOSTEK office:

PPG-08   MK 78 532

AIM-80E   MK 78 559

AIM-72E   MK 79 579

VDI-P/S   MK 78 586

FZCASM   MK 78 582   CROSS ASSEMBLER FOR THE F8/3870

APPENDIX B   COMPLETE PARTS LIST FOR SYS-80F

STANDARD MODULES:

OEM-80E	MK 78 124 A	24 VOLT P.S.	MK 78 093
RAM-80BE	MK 78 110	COMPLETE MANUAL	MK 78 576
FLP-80E	MK 78 112	BACKPLANE	MK 78 099
DISK DRIVE	MK 78 094	FLP-80 TO SA800 CABLE	MK 78 097
5 VOLT P.S.	MK 78 091	COMPLETE PROM SET	MK 78 095
+-12 VOLT P.S.	MK 78 092		

OPTIONAL ACCESSORIES

BOX OF DISKETTES	MK 78 144	10 SOFT SECTORED IBM COMPATIBLE DISKETTES
AIM-80E	MK 78 106	I.C.E. FOR THE Z80
AIM-80X	MK 78 132	CABLE ASSEMBLY FOR AIM-80E
RTM-80E	MK 78 133	AIM-80E WITHOUT AIM-80X
AIM-72E	MK 79 077	I.C.E FOR F8/3870 FAMILY
VDI-S	MK 78 033A	SERIAL VIDEO INTERFACE
VDI-P	MK 78 035A	PARALLEL VIDEO INTERFACE
VDI CABLE	MK 78 090	CABLE ASSEMBLY FOR VDI-S/P
PPG-08	MK 79 033	2708 PROM PROGRAMMER
PPG-08 CABLE	MK 79 060	CABLE ASSEMBLY FOR PPG-08
PPG-8/16	MK 79 082	2708/2758/2716 PROGRAMMER; INCLUDES CABLE
EXTENDER CARD	MK 79 062A	3 LAYER EXTENSION CARD FOR BOARD TESTING
WIRE WRAP CARD	MK 79 063	WITH SPACE FOR 112 20-PIN IC's
BACK PLANE CARD	MK 78 099	4-LAYER, 7-SLOT BACK PLANE, INCLUDES CONNECTORS
PRINTER CABLE	MK 78 098	CABLE FOR CENTRONICS TYPE PRINTERS

OPTIONAL SOFTWARE FOR THE SYS-80

FZCASM	MK 79 075	CROSS ASSEMBLER FOR F8/3870

BASIC
FORTRAN-80   CONSULT YOUR LOCAL MOSTEK OFFICE

FACTORY REPAIR SERVICE

In the event that difficulty is encountered with this unit, it may
be returned to MOSTEK for repair. This service will be provided free
of charge if the unit is returned within 90 days of purchase. However,
units which have been modified or abused in any way either will not
be accepted for service or will be repaired at the owner's expense.

When returning the circuit board, place it inside the conductive
plastic bag in which it was delivered in order to protect the MOS
devices from electro-static discharge during shipment (The circuit
board must NEVER be placed in contact with styrofoam material).
ENCLOSE a letter containing the following information with the
returned circuit board:

> Name, address, and phone number of purchaser
> Date and place of purchase
> Brief description of the difficulty
> Board type and serial number

Mail a copy of this letter SEPARATELY to your local MOSTEK office.

Securely package and mail the circuit board, prepaid and insured to
your local MOSTEK office.

LIMITED WARRANTY

MOSTEK warrants this product against defective materials and work-manship for a period of 90 days.

This warranty does not apply to any product that has been subjected to misuse, accident, improper installation, improper application, or improper operation, nor does it apply to any product that has been repaired or altered by other than MOSTEK personnel.

There are no warranties which extend beyond those herein specifically given.

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