R.62

DOT MATRIX PRINTER OPTION

user manual

IEEE-488 INTERFACE

EPSON

P8090019-4
Y490991040

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INTRODUCTION

The IEEE-488 Interface Board (Cat. No. 8161) allows IEEE-488 computers or instruments* to produce printed output on the EPSON FX, RX and MX series dot matrix printers.

* IEEE-488 computers or instruments mean those which have been designed to accommodate this standard.

This compact board provides a complete electronic link between any IEEE-488 computer or instrument and the EPSON dot matrix printer.
Using this IEEE-488 I/F Board, the EPSON dot matrix printer can be applied as:

- Peripheral printer for mini/micro computer systems.
- Hard copy output device for intelligent data terminals.
- Forms generation for scientific and data communication systems.

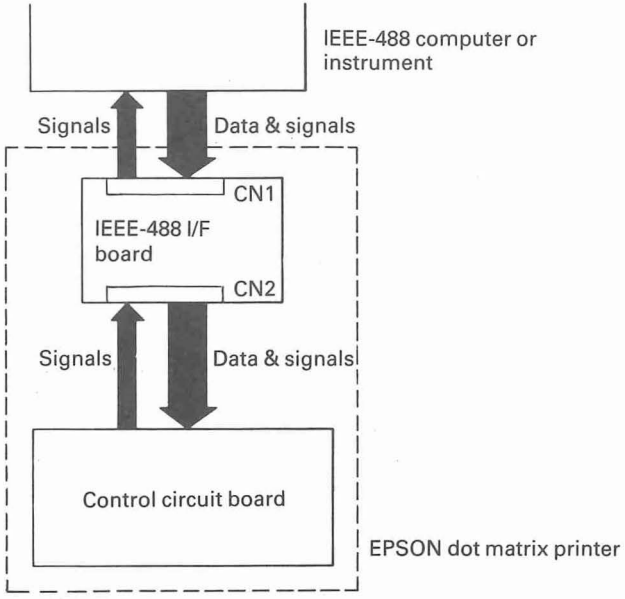


Fig. 1 Block Diagram

INTERFACING WITH EPSON DOT MATRIX PRINTER

1. IEEE-488 Connector

The IEEE-488 Interface Board (Cat. No. 8161) conforms, to all intents and purposes, to the intent of the specification; however, it is specifically designed for use with the EPSON dot matrix printers. Table 1 lists the pin configuration of the IEEE-488 mode of operation.

Table 1 Pin Configuration of CN1

Pin No.	Signal Name	Description
1	DI01	Data Bit 1
2	DI02	Data Bit 2
3	DI03	Data Bit 3
4	DI04	Data Bit 4
5	EOI	End Or Identify
6	DAV	Data Valid
7	NRFD	Not Ready For Data
8	NDAC	Not Data Accepted
9	IFC	Interface Clear
10	SQR	Service Request
11	ATN	Attention
12	FG	Frame Ground
13	DI05	Data Bit 5
14	DI06	Data Bit 6
15	DI07	Data Bit 7
16	DI08	Data Bit 8
17	REN	Remote Enable
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground

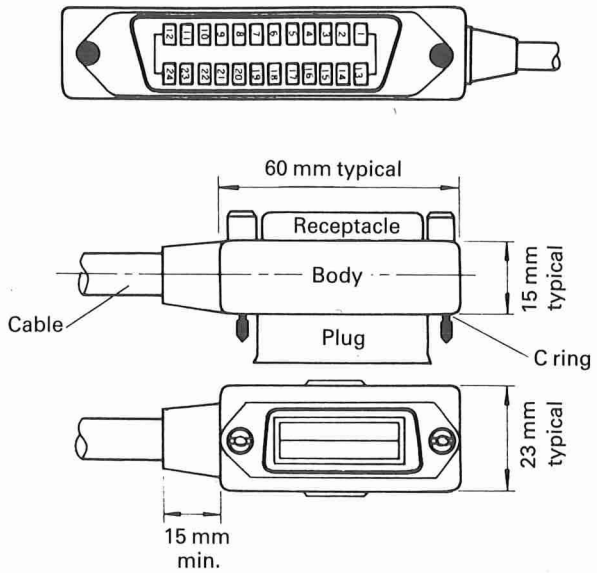


Fig. 2 IEEE-Standard-488

2. I/F Board Connector

Table 2 Pin Configuration of CN2 (HKP-26MS)

Pin No.	Signal Name	Description	Pin No.	Signal Name	Description
1	$\overline{\text{ERR}}$	Error	13	R	Reset
3	D7	Data Bit 7	15	D3	Data Bit 3
4	BUSY	Busy	16	+5	+5 Volt
5	D6	Data Bit 6	17	D2	Data Bit 2
7	D5	Data Bit 5	19	D1	Data Bit 1
8	$\overline{\text{INT}}$	Initial	23	$\overline{\text{SLCT IN}}$	Select In
9	D4	Data Bit 4	24	GL	Ground Logic
10	$\overline{\text{STB}}$	Strobe	25	ITR	Interrupt
11	D8	Data Bit 8	26	GL	Ground Logic

3. Setting of DIP Switches

There are two DIP switches on the IEEE-488 Interface Board (Cat. No. 8161). The methods of setting these switches are described below.

(1) DIP SW1

This switch is used to assign the printer (device) number.
The "ON" position of each DIP SW Pin corresponds to binary code "1" and the "OFF" position, binary code "0", respectively.

Address calculation formula:

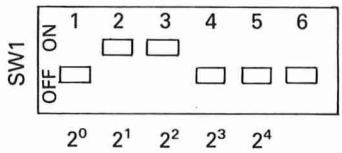
$$\text{Address}=2^4\times A_5 + 2^3\times A_4 + 2^2\times A_3 + 2\times A_2 + A_1$$

Table 3 Setting of DIP SW2

SW Pin No.	Function	ON	OFF	Factory-set condition
1-1	A_1	1	0	OFF
1-2	A_2	1	0	OFF
1-3	A_3	1	0	OFF
1-4	A_4	1	0	OFF
1-5	A_5	1	0	OFF
1-6	unused	—	—	OFF

Example: The following example shows how to set printer address "6".

$$6=2^4\times 0 + 2^3\times 0 + 2^2\times 1 + 2\times 1 + 0$$



(2) DIP SW2

When EPSON dot matrix printer is used in the IEEE-488 standard mode of operation, this switch must be set as shown below. This is the factory-set condition.

Table 4 Setting of DIP SW2

SW Pin No.	Position
2-1	ON
2-2	OFF
2-3	OFF
2-4	OFF

NOTE:
If you set DIP SW2 to the opposite setting of that shown above, i.e., Pin No. 2-1 to OFF and Pin Nos. 2-2 to 2-4 to ON, the IEEE-488 Interface Board can be used as an exclusive interface board for PET computers.

INSTALLATION

1. Installing the Interface Board in FX Series Printer

To install the IEEE-488 Interface Board (Cat. No. 8161) in an FX Series printer, observe the following procedure.

(1) Turn off the power switches of both the printer and the host computer.

NOTE:
Power should always be turned off when inserting or removing the interface board. Removal or insertion of the interface board with the power turned on could cause permanent damage to the board itself, as well as to the printer and the host computer.

(2) Pull and remove the manual paper feed knob.
(3) Remove the four screws shown in Fig. 3.

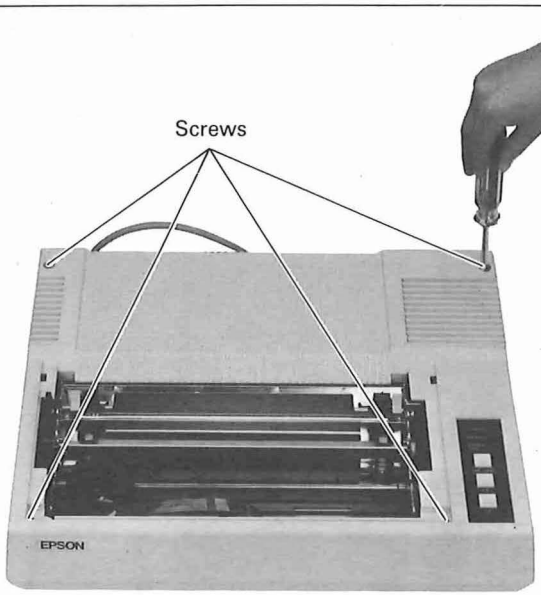


Fig. 3 Removal of Upper Case (1)

(4) Lift the upper case of the printer, unplug the cable connector connecting the control panel and the control circuit board from the control circuit board. (See Fig. 4.)

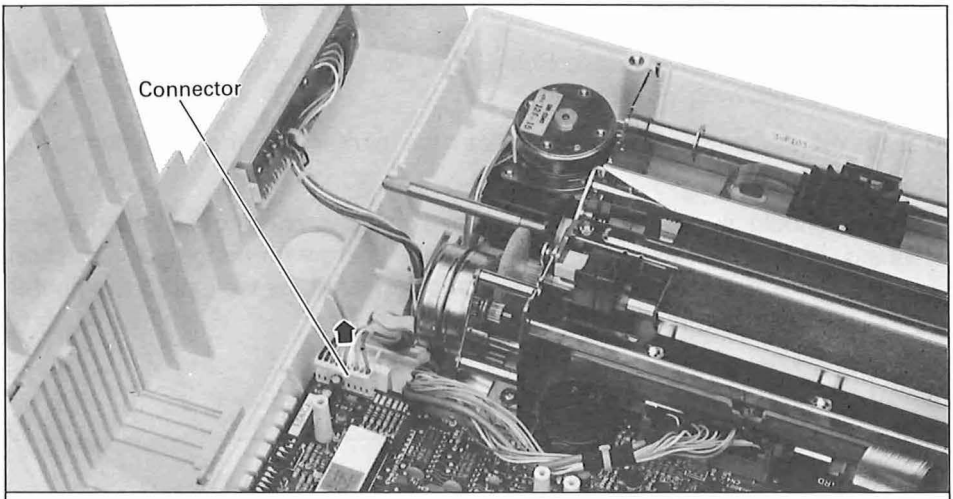


Fig. 4 Removal of Upper Case (2)

(5) Remove the upper case and the shield cover. After the upper case has been removed, four poles are visible at the inner rear left of the printer. (See Fig. 5.)

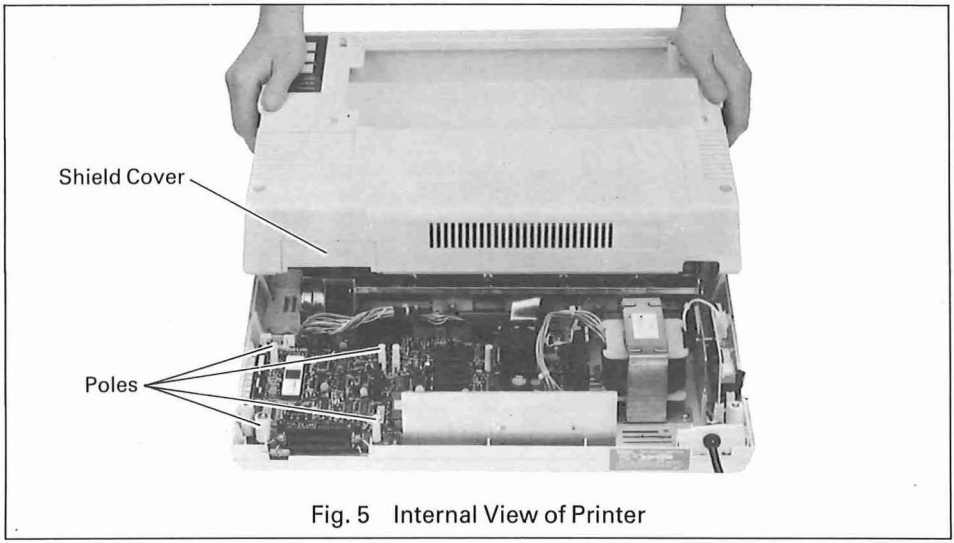


Fig. 5 Internal View of Printer

(6) Loosen the screw set in the FG (frame ground) pattern.

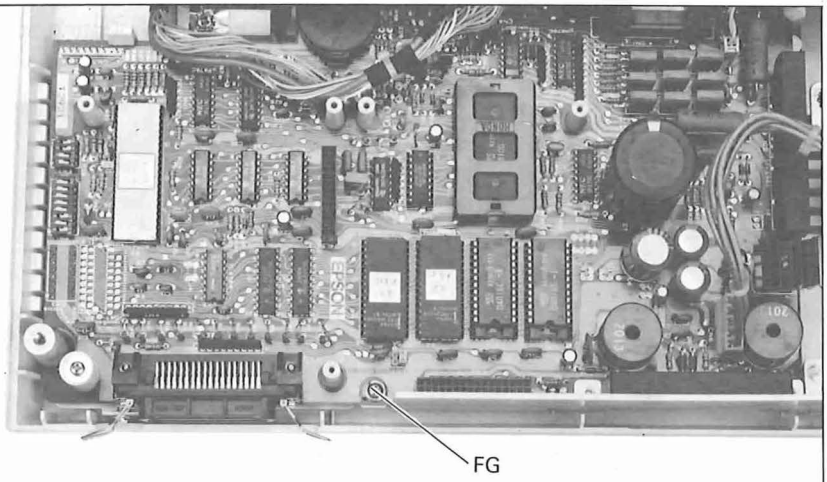


Fig. 6 Loosening the Screws

(7) Connect one end of the Frame Ground wire (Round Chip) contained in the shipping package of this interface as an accessory to the frame ground terminal. (See Fig. 7.)

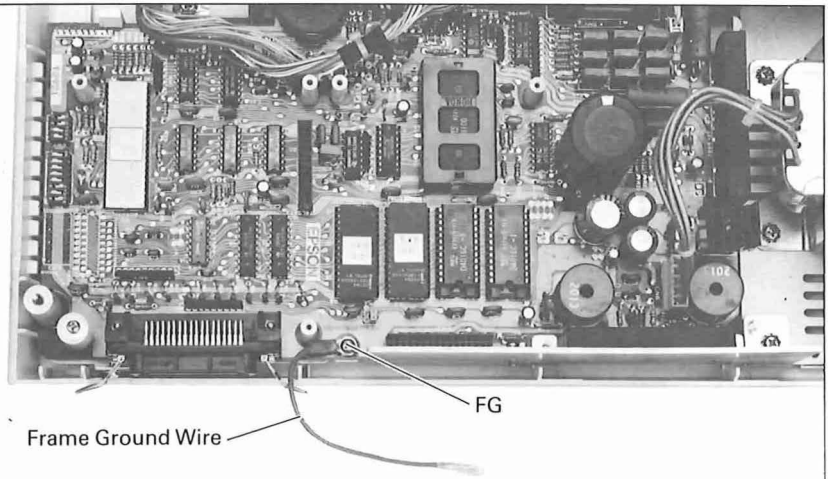


Fig. 7 Connecting Frame Ground Wire

(8) Plug the connector of the IEEE-488 Interface Board (Cat. No. 8161) into the mating connector (CN2) on the control circuit board of the printer.
(9) Secure the I/F Board on the four poles with the four mounting screws. (See Fig. 8.)

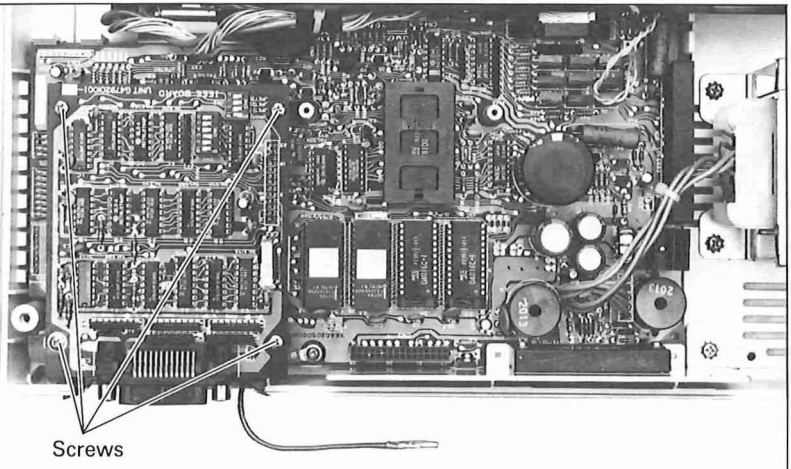


Fig. 8 Mounting the IEEE-488 Interface Board

(10) Connect the Frame Ground wire (FASTON chip) to the FG terminal (TP1) of the Interface Board (Cat. No. 8161). (See Fig. 9.)

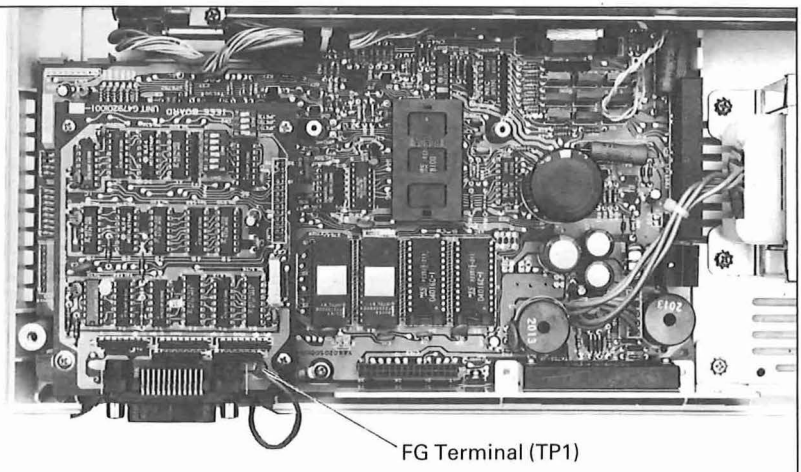


Fig. 9 Connection of FG Wire to FG Terminal

(11) Replace the upper case.

Two types of FX Series printer are available. One type incorporates a SUMI Board for carriage control and the other type, a Slave CPU 8042 for this purpose. Both types are fully compatible. Observe the following procedures to install the IEEE-488 Interface Board in an FX Series printer incorporating a SUMI Board.

Remove the upper case and the shield cover in the same manner as the FX Series printer incorporating a Slave CPU 8042.

(1) Turn off the power switches of both the printer and the host computer.

NOTE:
Power should always be turned off when inserting or removing the interface board. Removal or insertion of the interface board with the power turned on could cause permanent damage to the board itself, as well as to the printer and the host computer.

(2) Pull and remove the manual paper feed knob.
(3) Remove the four screws shown in Fig. 3.
(4) Lift the upper case of the printer, unplug the cable connector connecting the control panel and the control circuit board from the control circuit board. (See Fig. 4.)
(5) Remove the upper case and the shield cover. After the upper case has been removed, four poles are visible at the inner rear left of the printer. (See Fig. 5.)

(6) Remove the three screws securing the SUMI Board as shown in Fig. 10 and unplug the connector of SUMI Board into the mating connector (CN3) of the control circuit board.

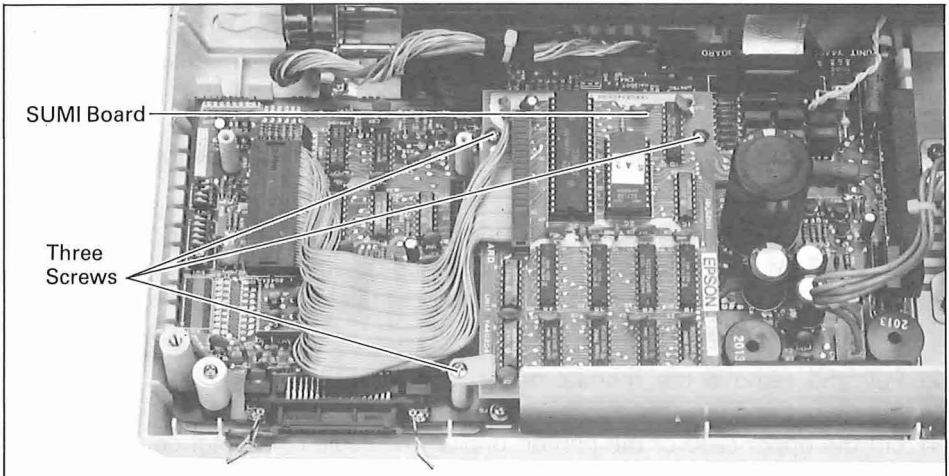


Fig. 10 Three Screws Securing SUMI Board

(7) Loosen the screw set in the FG (frame ground) pattern.

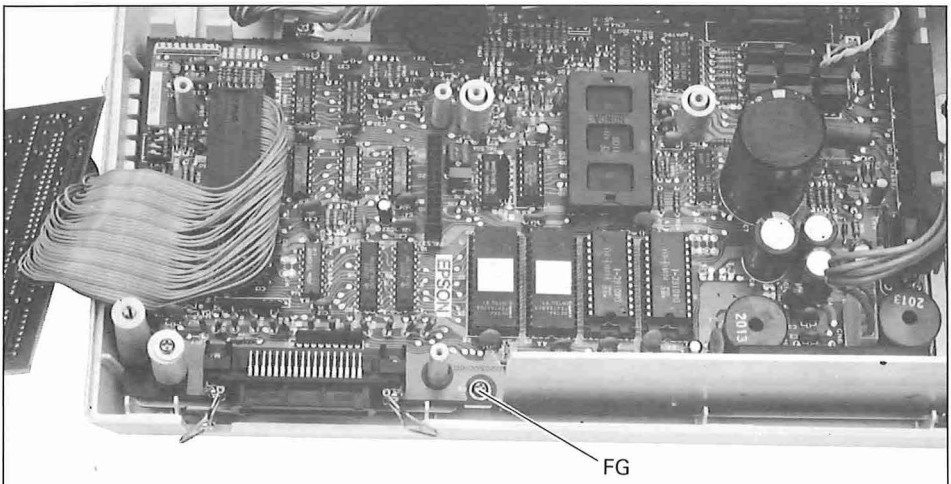


Fig. 11 Internal View of Printer with SUMI Board Removed

(8) Connect one end of the frame ground wire (Round Chip) contained in the shipping package of this interface as an accessory to the frame ground terminal. (See Fig. 12.)

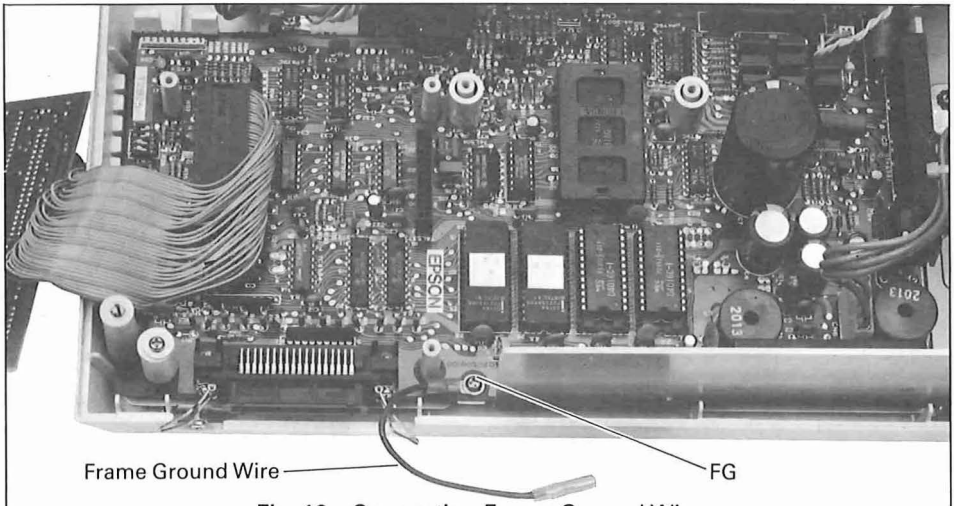


Fig. 12 Connecting Frame Ground Wire

(9) Remount the SUMI Board. (See Fig. 13.)

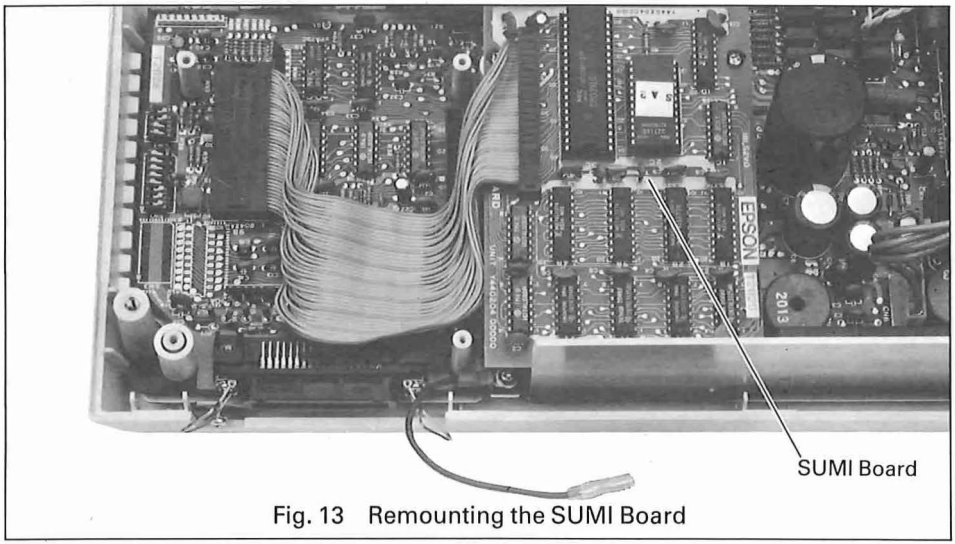


Fig. 13 Remounting the SUMI Board

(10) Plug the connector of the IEEE-488 Interface Board (Cat. No. 8161) into the mating connector (CN2) on the control circuit board of the printer.
(11) Secure the I/F board on the four poles with the four mounting screws. (See Fig. 14.)

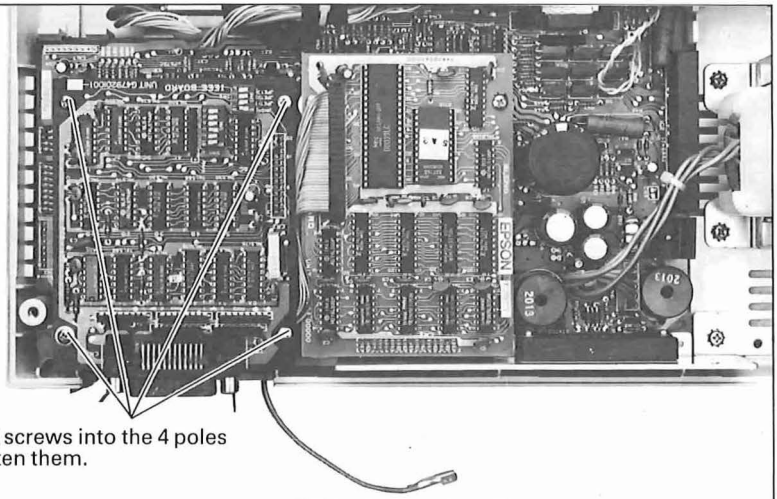


Fig. 14 Mounting the IEEE-488 Interface Board

(12) Connect the Frame Ground wire (FASTON chip) to the FG terminal (TP1) of the Interface Board (Cat. No. 8161). (See Fig. 15.)

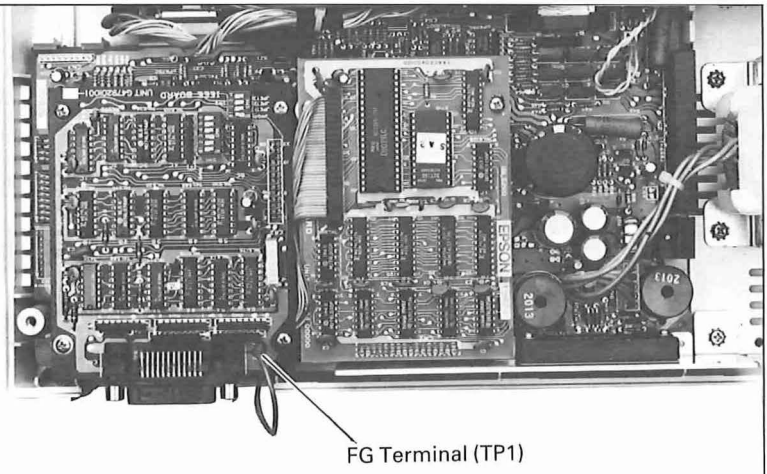


Fig. 15 Connection of FG Wire to FG Terminal

(13) Replace the upper case.

2. Installing the Interface Board in RX Series Printer

To install the IEEE-488 Interface Board (Cat. No. 8161) in the RX Series printer, observe the following procedure.

(1) Turn off the power switches of both the printer and the host computer.

NOTE:
Power should always be turned off when inserting or removing the interface board. Removal or insertion of the interface board with the power turned on could cause permanent damage to the board itself, as well as to the printer and the host computer.

(2) Take off the upper case of the printer as follows. (Refer to the operation manual of the RX series printer for details.)
1) Remove the two screws securing the upper case shown in Fig. 16.
2) Pull and remove the manual paper feed knob and the connector at the front right corner of the upper case.

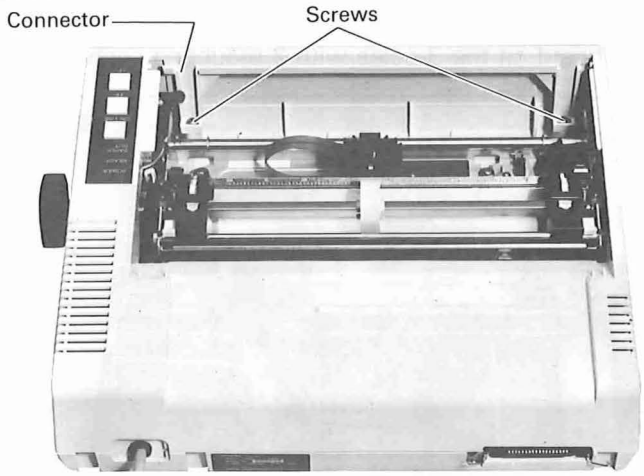


Fig. 16 Locations of Upper Case Securing Screws

3) Take off the upper case and the shield cover. (See Fig. 17.)

NOTE:
The rear of the upper case (where the parallel interface connector is located) is secured with hooks instead of screws. Therefore, the upper case may be removed easily by lifting the case from its front. After the removal of the upper case, 3 poles are visible at the inner rear center of the printer.

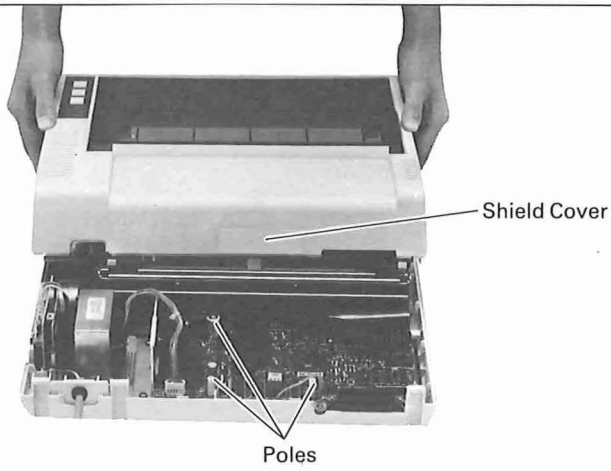


Fig. 17 Removal of Shield Cover

(3) Plug the connector of the IEEE-488 Interface Board (Cat. No. 8161) into the mating connector (CN3) on the control circuit board of the printer as shown in Fig. 18.
(4) Secure the I/F board on the 3 poles with 3 mounting screws. (See Fig. 18.)

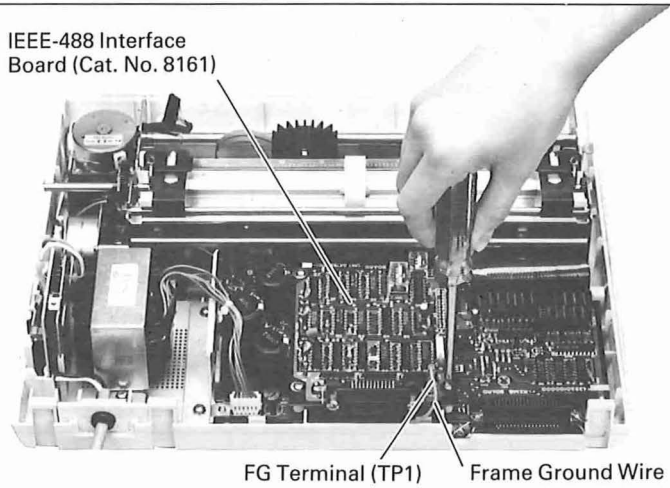


Fig. 18 Mounting IEEE-488 Interface Board

(5) Disconnect the Frame Ground wire from the control circuit board and connect it to the FG terminal (TP1) of the I/F board.
(6) Replace the upper case.

3. Installing the Interface Board in MX Series Printer

To install the IEEE-488 Interface Board (Cat. No. 8161) in the MX Series printer, observe the following procedure.

(1) Turn off the power switches of both the printer and the host computer.

NOTE:
Power should always be turned off when inserting or removing the interface board. Removal or insertion of the interface board with the power turned on could cause permanent damage to the board itself, as well as to the printer and the host computer.

(2) Take off the upper case of the printer as follows. (Refer to the operation manual of the applicable MX Series printer for details.)
1) Remove the 4 screws situated at the bottom of the lower case. (With the MX-100 printer, however, remove the five screws situated on the upper case.)
2) Pull and remove the manual paper feed knob and the connector at the front right corner of the upper case.
3) Take off the upper case and the shield cover.

After the removal of the upper case, four poles are visible at the inner rear center of the printer.

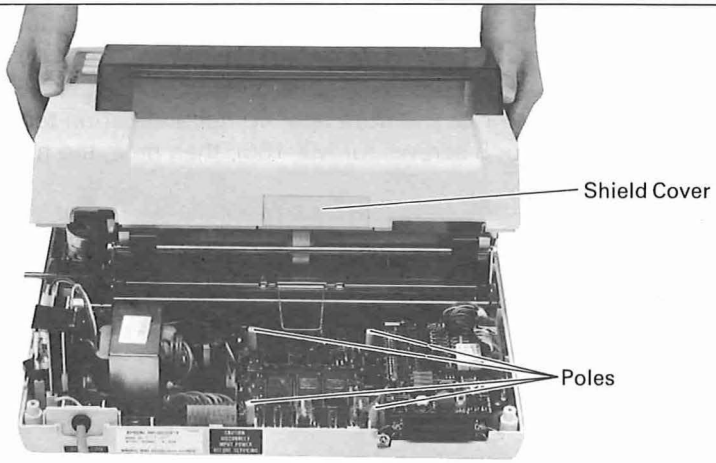


Fig. 19 Removal of Upper Case

(3) Plug the I/F board connector into the mating connector on the control circuit board of the printer as shown in Fig. 20.

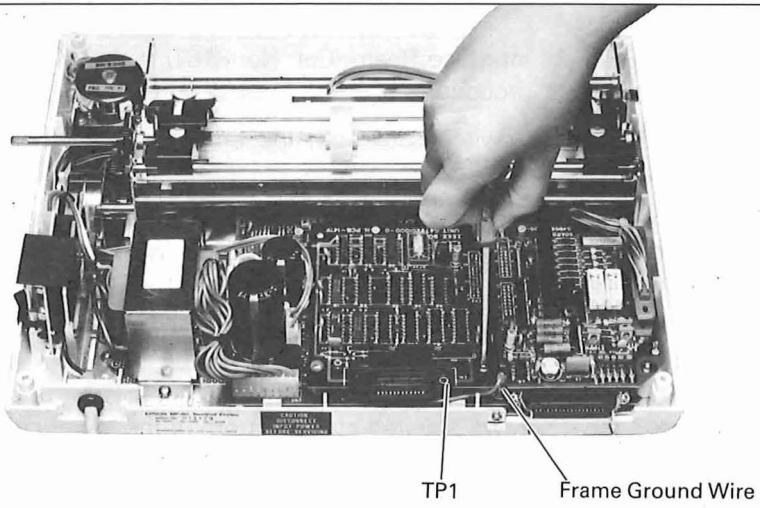


Fig. 20 Installation of I/F Board

(4) Put the 4 screws into the 4 poles and tighten them. (See Fig. 20.)
(5) Disconnect the Frame Ground wire from the control circuit board and connect it to the terminal TP1 of the I/F board.
(6) Push the connector in at the front right corner and put on the upper case and tighten 4 screws (or 5 screws for MX-100), then push the manual paper feed knob in.

HARDWARE DESCRIPTION

The IEEE-488 Interface Board (Cat. No. 8161) is designed to interface with the EPSON dot matrix printers.
In this chapter, the hardware of the Interface Board is described.

(1) Block Diagram of I/F Board

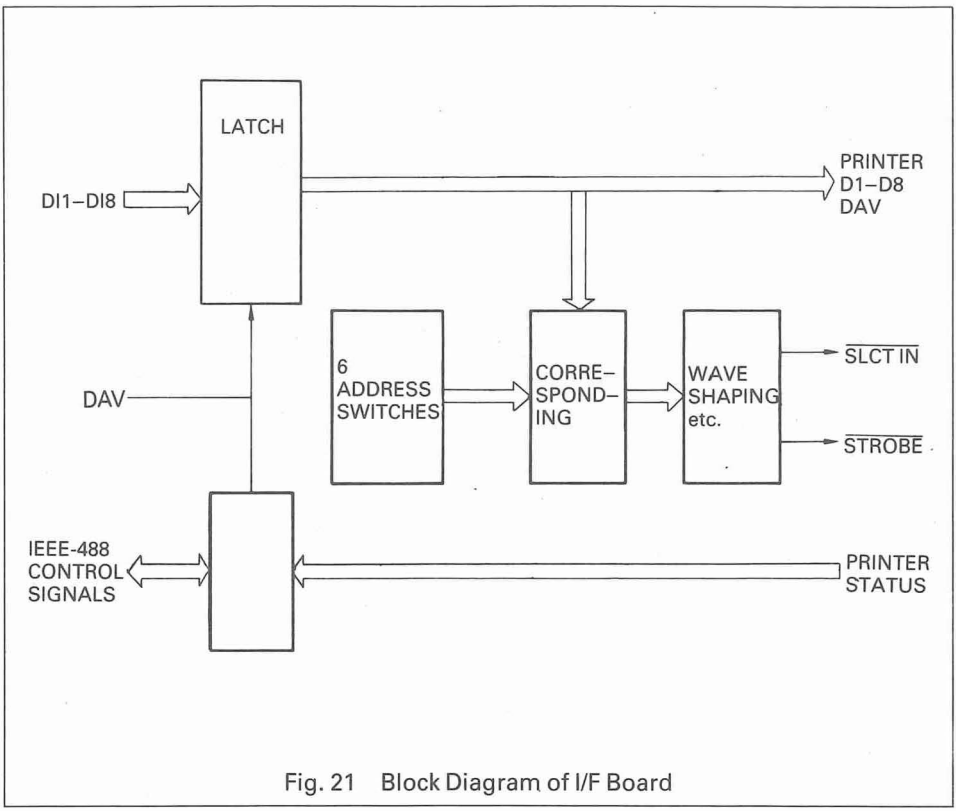


Fig. 21 Block Diagram of I/F Board

(2) Location of Parts

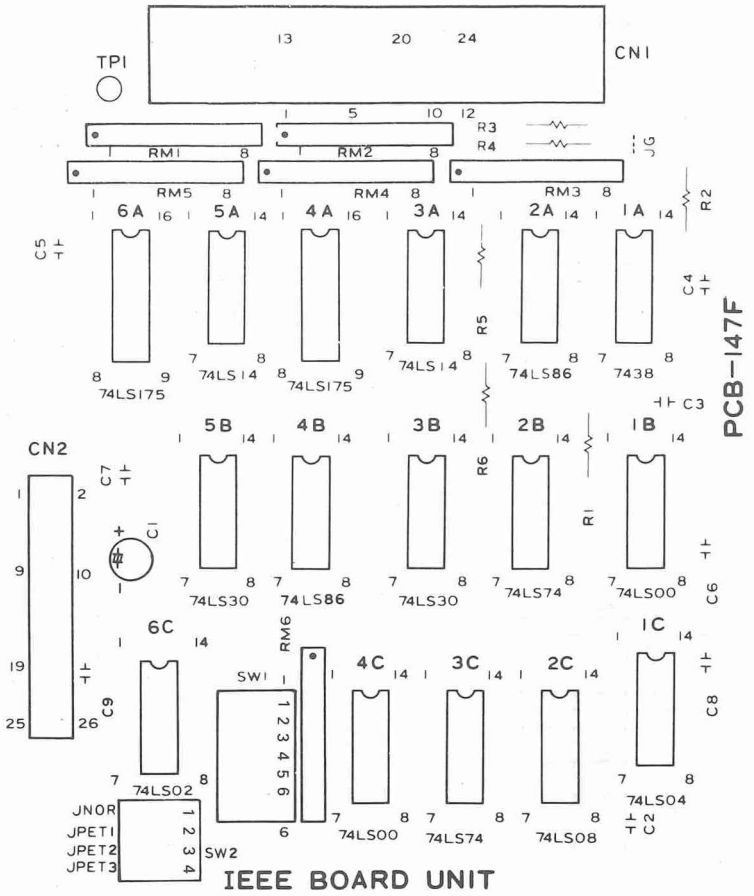


Fig. 22 Location of Parts

(3) Schematic Diagram

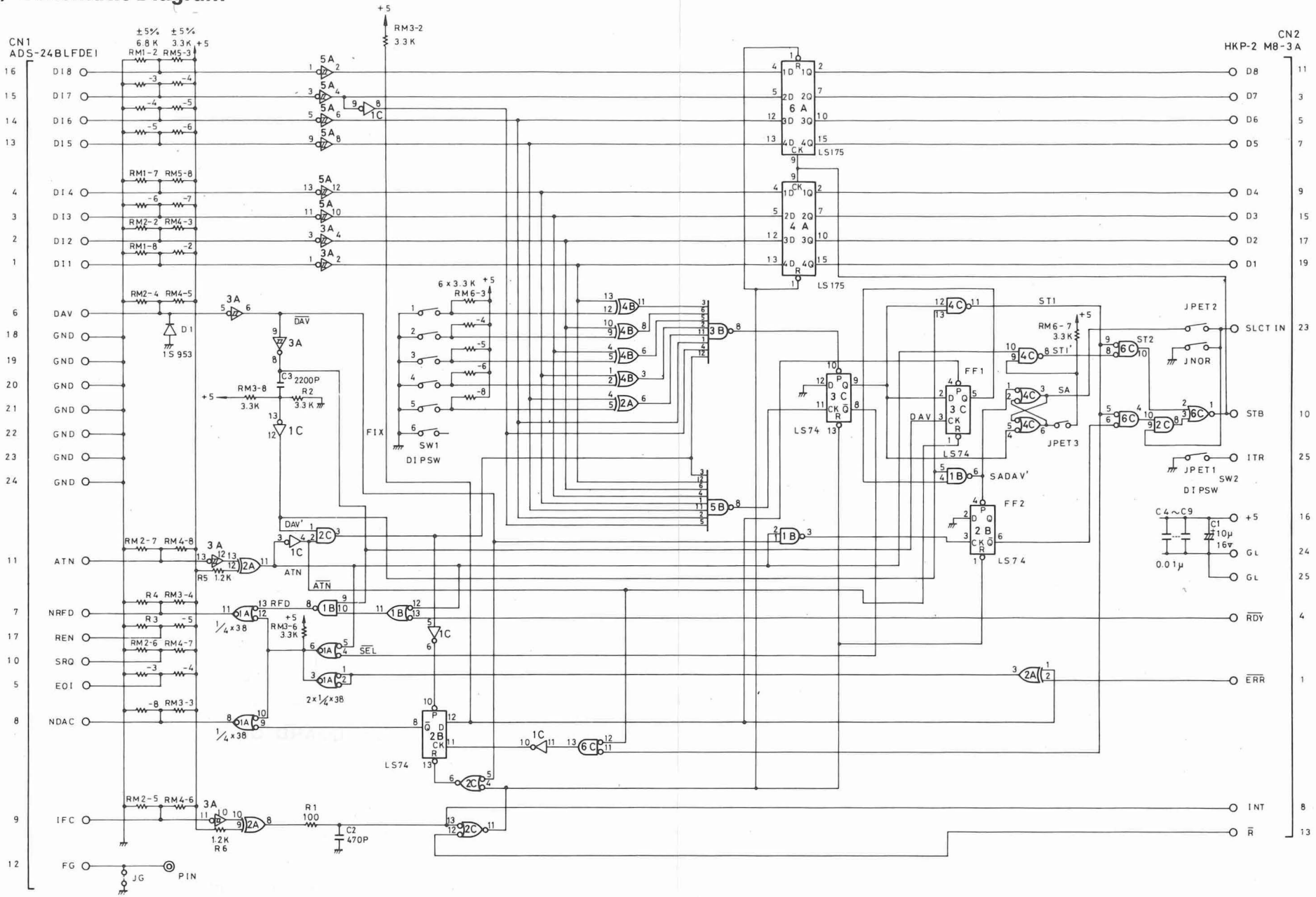


Fig. 23 Schematic Diagram

PARTS LIST

Part Name	Location No.	Standard	QTY
TTL-IC	1A	7438	1
TTL-IC	1B, 4C	74LS00	2
TTL-IC	6C	74LS02	1
TTL-IC	1C	74LS04	1
TTL-IC	2C	74LS08	1
TTL-IC	3A, 5A	74LS14	2
TTL-IC	3B, 5B	74LS30	2
TTL-IC	2B, 3C	74LS74	2
TTL-IC	2A, 4B	74LS86	2
TTL-IC	4A, 6A	74LS175	2
Solid Resistor	R1	ERC-14GK101	1
Solid Resistor	R2	ERC-14GK332	1
Solid Resistor	R3, R4	ERC-14GJ682	2
Solid Resistor	R5, R6	ERC-14GK122	2
Resistor Array	RM1, RM2	EXB-P87682J	2
Resistor Array	RM3–RM5	EXB-P87332J	3
Resistor Array	RM6	EXB-P87332K	1
Electrolytic Capacitor	C1	ECE-AICV100S	1
Film Capacitor	C3	ECQ-MIH222KZ	1
Ceramic Capacitor	C2	ECK-FIH471KB	1
Ceramic Capacitor	C4–C9	ECK-FIH103ZF	6
DIP Switch	SW1	DIP-A6	1
DIP Switch	SW2	DIP-A4	1
Connector	CN1	ADS-24BLFDE1	1
Connector	CN2	HKP-26MS-3B	1
FASTON Tab	TP1	61134-1	1

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