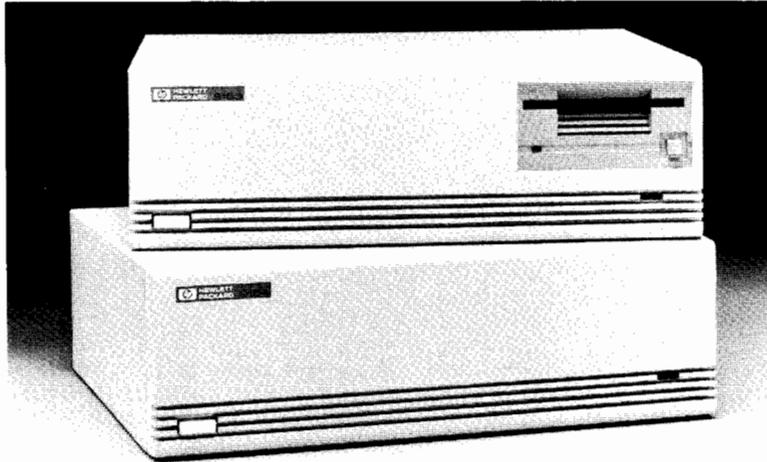


HP 9153/54



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Part No. 5958-4123
For use with binder No. 9282-0683

Printed in USA
September, 1985

NOTICE

This Handbook is intended only for service personnel trained in its use by Hewlett-Packard. It is designed as a quick reference guide to commonly used service information. The information contained here is highly condensed from other manuals and this volume is not intended to be a substitute for, but rather a supplement to those manuals.

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There are no suggested field adjustments.	

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This section has been intentionally left blank.

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REFERENCE

For information on the drive mechanisms, refer to the tabbed Reference Section of this handbook.

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SECTION I



PRODUCT INFORMATION

[1] INTRODUCTION

The HP 9153A/9154A Disc Drives are random access data storage devices. The HP 9153A contains a single 3 1/2-inch double-sided flexible disc drive providing 710 Kbytes (at 512 bytes/sector) of storage capacity and a 3 1/2-inch Winchester disc drive which provides 10 mbytes of storage capacity. The HP9154A contains a 3 1/2-inch Winchester disc drive. The HP 9153A/9154A Drives use a personality module for the HP-IB interface. The personality module is a printed circuit assembly which is removable. Only the HP-IB interface will be available at product introduction.

[2] TECHNICAL SPECIFICATIONS

PERFORMANCE CHARACTERISTICS

	Double-Sided 3 1/2" Floppy Disc	10 Mbyte Winchester
<u>Maximum Formatted Capacity</u>		
HP 150		
Bytes Per Unit	710 KB	10.0 MB
Bytes per Sector	512	256
Sectors per Track	9	28
Series 200		
Bytes Per Unit	630 KB	10.0 MB
Bytes Per Sector	256	256

Sectors per Track	16	28
Tracks per Surface	80	698
Surfaces per Disc	2	2

POWER REQUIREMENTS

	9153A	9154A
Voltage (selected by rear panel switch)	86-127VAC (115V setting) 195-253VAC (230V setting)	86-127VAC 195-253VAC
Frequency	48-66 Hz	48-66Hz
Power	100W	100W

[3] SERVICE KITS

The following list of assemblies and parts is recommended for your Field Service Inventory (FSI).

3 1/2-inch Flexible Disc Drive	09114-69511
Controller PCA (9153A)	09153-69502
Controller PCA (9154A)	09154-69502
3 1/2-inch Winchester Disc Drive	09153-69111
Power Supply	09153-69501
Personality Module (HP-IB)	09153-69503
Flexible Disc Drive Controller Cable	09153-61600
Power Cable	09153-61601
Winchester Disc Drive Cable	09153-61602
Fuse 2A 250V	2110-0002

SECTION II

ENVIRONMENTAL/INSTALLATION/PM

[1] ENVIRONMENTAL CONSIDERATIONS

	9153	9154
Temperature		
Operating	10 to 40 degrees C (50 to 104 degrees F)	10 to 40 degrees C (50 to 104 degrees F)
Non-Operating	-40 to 60 degrees C (-40 to 140 degrees F)	-40 to 60 degrees C (-40 to 140 degrees F)
Humidity		
Operating	20% to 80%	8% to 80%
(non-condensing)		
26 degrees C max wet		
bulb temperature		
Non-Operating	5% to 90%	5% to 90%
(non-condensing)		
Altitude		
Operating	0 to 4572m (0 to 15000 ft)	0 to 4572m (0 to 15000 ft)
Non-Operating	-304 to 1524m (-1000 to 50000 ft)	-304 to 1524m (-1000 to 50000ft)

[2] INSTALLATION CONSIDERATIONS

Installation is normally a customer responsibility. Refer to the configuration section for information on HP-IB address settings.

[3] PREVENTIVE MAINTENANCE

No preventive maintenance is required.

SECTION III CONFIGURATION



[1] ADDRESS CONFIGURATION

Configuration consists of setting the HP-IB address only. Configure the unit for the desired address as stated below. Refer to Figure 3-1 for location of HP-IB address switch.

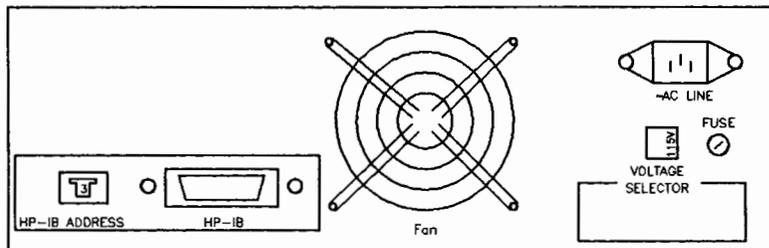


Figure 3-1. Rear view 9153A/54A.

HP-IB Address Switch

The HP-IB address switch is a rotary switch with decimal numbers. This switch setting has the following meanings:

HP-IB switch = 0 through 7	HP-IB address of device is the same as the switch setting.
	Hard disc = unit 0 Floppy = unit 1
HP-IB switch = 8 or 9	HP-IB address of the device is
	Hard disc = unit 1 Floppy = unit 0

The HP-IB switch is being used for more than just the HP-IB address of the device. It is being used to designate whether the flexible disc drive is unit 0 or unit 1. This was necessary for the HP 150 since certain versions could only boot from HP-IB address 0 and unit 0. Note that the actual HP-IB addresses are still numbers from 0 through 7. Addresses 8 and 9 are the same as address 0.

[2] DRIVE CONFIGURATION**Configuration Switches**

Switch bank SW1 (Use Figure 9-2 in the Diagrams section for location) is used to set the drive configuration. At power up the firmware looks at these switches to determine how many flexible disc drives and/or Winchester drives it should expect. The different selections are as follows:

CONFIGURATION SWITCHES

SWITCH 1234	NUMBER OF	
	HARD DISCS	FLOPPY DISKS
xxCC	1	1
xCOC	0	2
xOOC	0	1
xCCO	2	0
xOCO	1	0
xxOO	1	1

KEY -

0 = OPEN
 C = CLOSED
 x = don't care

[3] VOLUME CONFIGURATION**Volume Select Switch**

Volume selection is accomplished by SW2 switch bank located on the HP-IB interface module (see Figure 9-3 in the Diagram Section). The switches allow the user to divide the Winchester disc into multiple volumes. These volumes are physical volumes which can be formatted independently with different interleaves and can have different file systems on them. To use this feature, the host must support multiple volumes. If the host supports only a single volume, volume 0, then this feature is of no use and should be set to the one volume setting. The Settings on the volume switch have the following meanings:

VOLUME SELECT SWITCH

Switch Setting 1234	Number of volumes	Capacity Megabytes
xxCC	1	10
xxC0	2	5
xx0C	4	2.5
xx00	8	1.25

KEY -

- O = OPEN
- C = CLOSED
- x = don't care

NOTE

To change the volume switches, first turn off the power, remove the two screws holding the Personality Module in place, remove the module, and select the kind of divisions you want. Now replace the Personality Module and turn the power back on. In order to write directories, reformat any volumes you are going to use. All old data will be lost when you format the volume. The switches also may be accessed directly when the top cover is removed.

[4] WINCHESTER DISC DRIVE CONFIGURATION

When the Winchester disc drive is replaced, verify that the switch located at the rear of the drive is configured as shown in Figure 3-3.

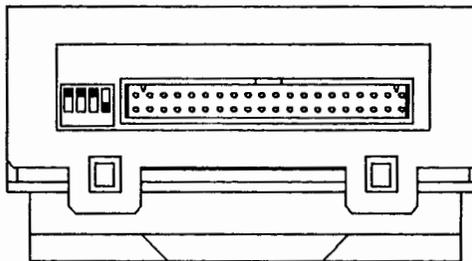


Figure 3-3. Winchester drive configuration switch.

SECTION IV

TROUBLESHOOTING

[1] POWER-ON SELFTEST

1. Both LEDs (fault LED and Winchester access LED) stay off. The microprocessor has failed. Replace the Controller PCA.
2. Both LEDs stay on. The microprocessor failed power-on test or the main CPU RAM failed. Replace the Controller PCA.
3. FAULT LED on 6 seconds, blinks off 7 times, repeats. HP-IB Personality interface module failed. Replace the Interface
4. FAULT LED on 6 seconds, blinks off 6 times, repeats. The HP-IB Interface Module failed. Replace the Interface module.
5. FAULT LED on 6 seconds, blinks off 2 times, repeats. Processor RAM is bad. Replace the Controller PCA.
6. FAULT LED on 6 seconds, blinks off 1 time, repeats. Rom checksum is wrong. Replace the Controller PCA.
7. FAULT LED on 6 seconds, blinks off 3 times, repeats. The buffer RAM is bad. Replace the Controller PCA.
8. FAULT LED on 6 seconds, blinks off 4 times, repeats. The configuration switches are set to an illegal configuration. Check the settings with Figure 3-5 in Chapter 3. The switches are located near the center of the board.
9. FAULT LED on 6 seconds, blinks off 5 times, repeats. The HP-IB chip is bad. Replace the Interface Module.

If all of the tests passed, then the FAULT LED goes out and the 9153A/9154A is ready for use.

For information on Selftest available, see the Diagnostics Section.

[2] FLOPPY DISC INTERCHANGING

It is possible for a drive to pass all READ/WRITE tests, yet fail when reading a disc which has been initialized or written on by another drive. This type of failure can be caused by misalignment of the drive mechanism or of the PLL frequency.

To determine which drive is misaligned, test with a disc that has been initialized and written on by a known-good drive.

[3] POWER SUPPLY

Power supply voltages should be checked before any troubleshooting procedures are started. The following Figure (Figure 4-1) shows the location of power supply voltage test points. This will aid you in isolating the failure to a replaceable assembly. The power supply is a non exchange assembly.

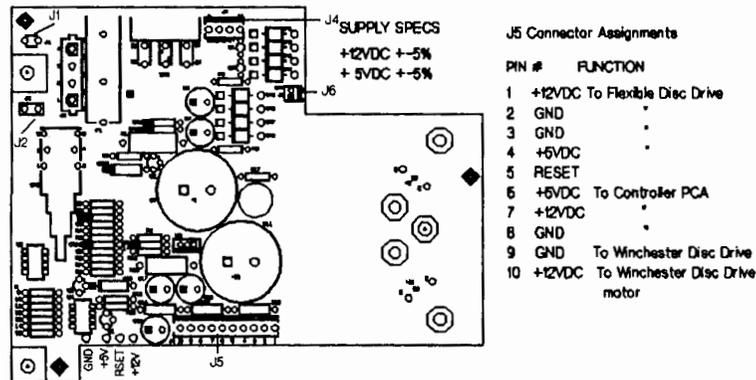


Figure 4-1. Power supply PCA.

SECTION V

DIAGNOSTICS



[1] SELFTESTS

There are 8 selectable selftests available. The list of tests follows after this explanation of procedure and the example of running the RAM test.

To run the tests, the HP-IB address switch should be set to the desired test number and the "TEST" test point, located to the right of the flexible disc cable connector (J4), must be jumpered to ground (GND). This will run the test continuously. To run the test once, momentarily short the "TEST" test point to ground. Refer to Figure 9-2 in the DIAGRAMS section (Section 9) for location of test points.

NOTE

Because the RAM test clears all parameters, some of which are needed for other tests, do not switch arbitrarily from test to test. The RAM test should be performed first or be the last test which is run. After each RAM test the unit goes through its power-on sequence.

The following is an example of running the RAM test as the first test performed.

1. Turn off the power to the unit.
2. Select the RAM test (0 on the HP-IB address switch) and jumper the "TEST" test point to ground (GND).
3. Turn on power. The unit then begins executing the RAM test. The yellow fault LED remains on during the test. When the test is completed, the yellow fault LED should blink 5 times. If the yellow fault LED remains on continuously, the test failed.

4. Turn power off. Select the next test using the HP-IB address switch. Do NOT select the RAM test (0 or 8).
5. Turn on power. The unit will begin the specified test. Again, when the test completes, the yellow fault LED should blink 5 times. If it doesn't, the test failed. The unit automatically repeats the test until another test selection is made or the unit is turned off.

More tests may be selected, as needed (except the RAM test) without turning the power off. There is a delay after the selection of a test until execution of the test is begun.

Fault LED Functioning

The yellow fault LED will go on for one second (To show that it works) at the beginning of each test. The LED will then go on, and stay on, during the length of the test. A pass indication is displayed by the fault LED blinking 5 times. A failure is displayed by the fault LED remaining on.

[2] INDIVIDUAL SELFTESTS AVAILABLE

TEST #	TEST TIME	TEST DESCRIPTION
0 or 8 RAM	2s	All possible patterns are written in all locations of the microprocessor RAM
1 or 9 ROM	3s	A checksum calculation is performed.
2 INTERFACE	3s	Two of the registers on the HP-IB IC (located on the HP-IB Personality Module) are written to and their contents are verified.
3 FDC IC	3s	Two of the registers on the FDC IC are written to and their contents are verified.

4	Data buffer RAM test	3s	Test the data buffer RAM.
* 5	Power-on selftest for Unit #0		The power-on selftest is performed on Unit #0 exclusively.
* 6	Power-on selftest for Unit #1		The power-on selftest is performed on Unit #1 exclusively. (If this position is selected on a 9154A, it will be ignored.)
7	Floppy Verify	40s	All sectors in the data area of the disc are checked for CRC errors. No user data is affected. (If this position is selected on a 9154A, it will be ignored.) A disc must be in the drive to perform Test 7. Use an initialized non write protected scratch disc. This is to ensure that no customer data will be lost.

* The HP-IB address determines which drive will
be unit 0 or unit 1 when the 9153A/54A is
turned on.

NOTE

A disc must be in the drive to perform test 7.
Ensure that the disc is not write protected and
that it is an initialized scratch disc.

SECTION VI

ADJUSTMENTS

The electrical and mechanical adjustments for the HP 9153A/54A are not normally performed in the field. Refer to the product's service manual for adjustment information.



SECTION VII
PERIPHERALS

This section has been intentionally left blank.

SECTION VIII

REPLACEABLE PARTS

[1] EXCHANGE ASSEMBLIES

09153-69502	HP 9153	Controller PCA
09154-69502	HP 9154	Controller PCA
09114-69511	3 1/2-inch	Drive (double-sided)
09153-69111	3 1/2-inch	Winchester Disc Drive

[2] NON-EXCHANGE ASSEMBLIES

09153-69503	HP-IB	Interface Module
09125-68500	Fan	assembly
09153-61600	Flexible Disc Drive	Controller Cable
09153-61601	Power	Cable
09153-61602	Winchester Disc Drive	Controller Cable
09153-69501	Power	Supply
2110-0002	Fuse	2A 250V



SECTION IX

DIAGRAMS

The following diagrams are for use in troubleshooting.

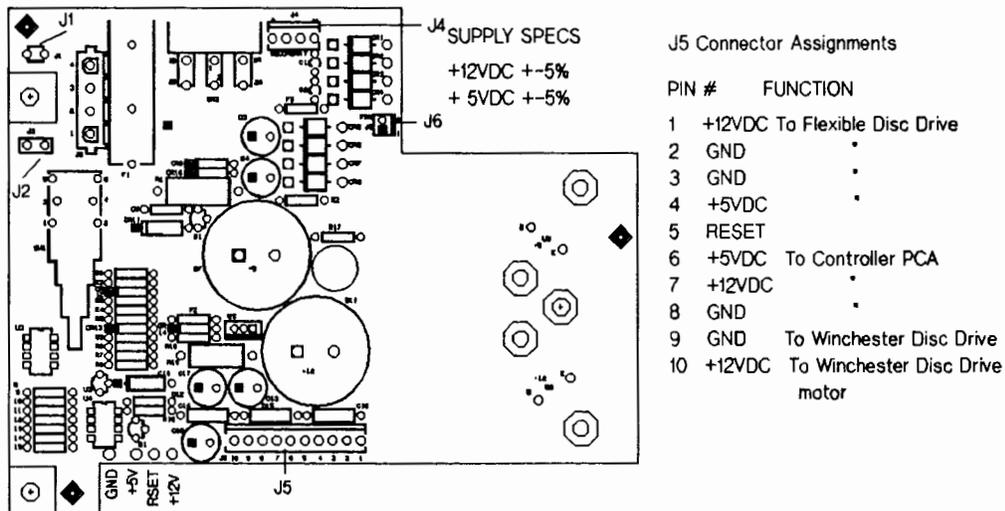


Figure 9-1. Power Supply PCA.



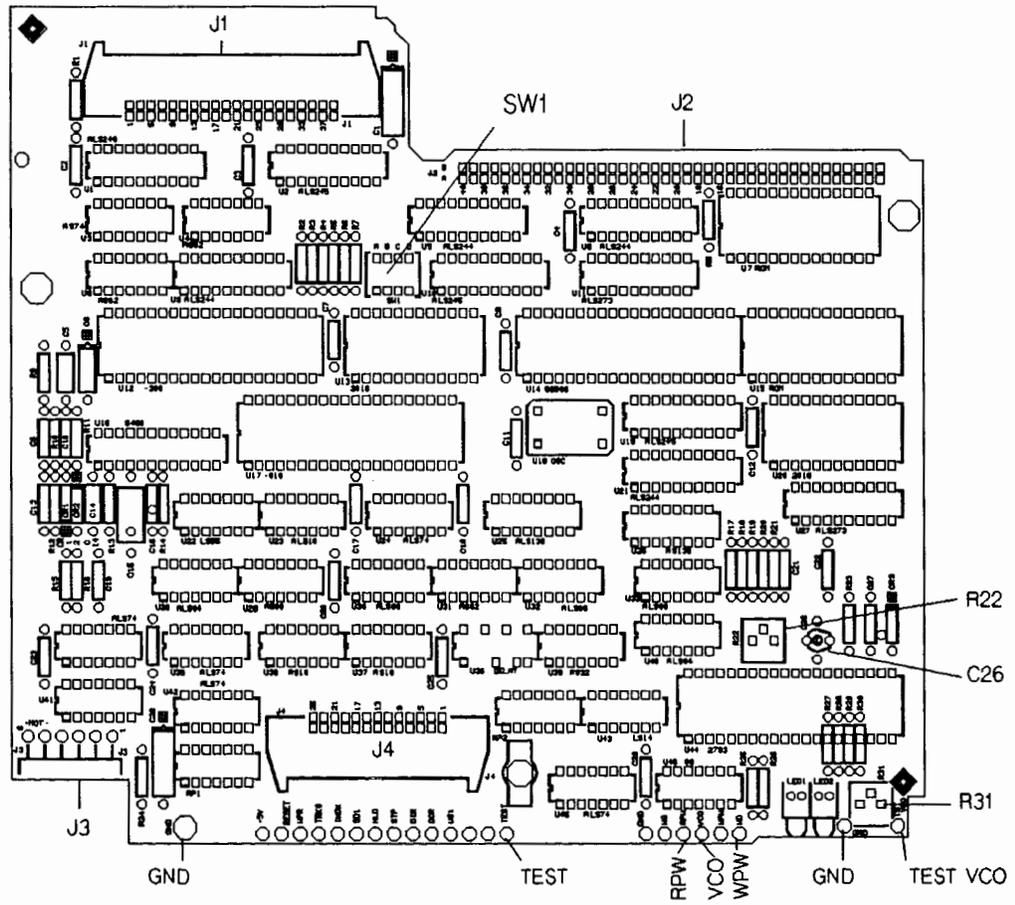


Figure 9-2. Controller PCA.



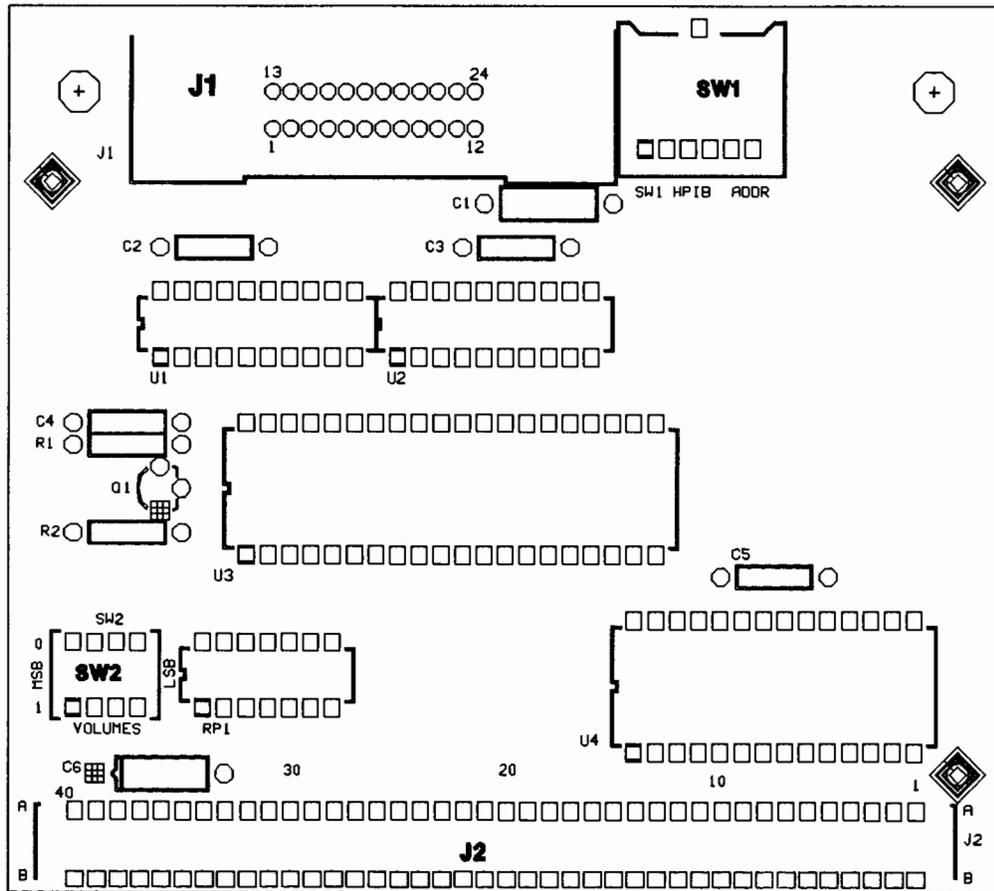


Figure 9-3. HP-IB PCA.



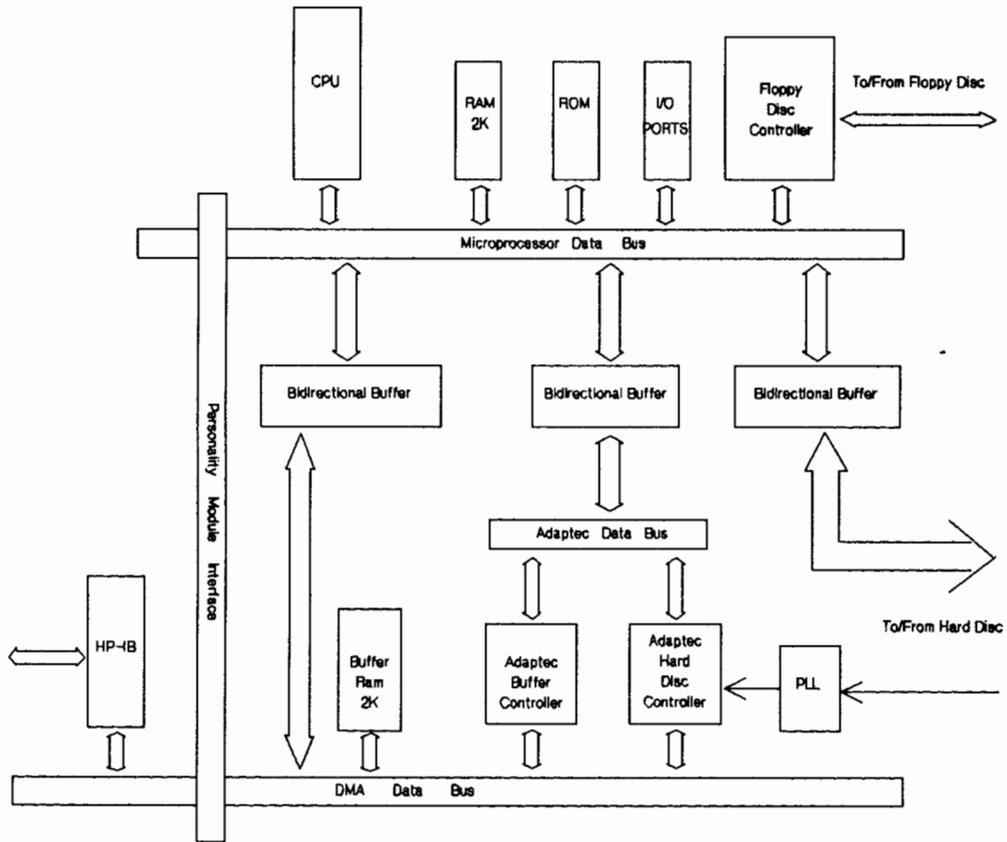


Figure 9-4. Block Diagram 9153A/54A.

