

2-7. ADJUSTMENT PROGRAM

The Adjustment Program is required when performing parts of the HP 4284A's adjustments. Table 2-2 shows which adjustments require the adjustment program.

Table 2-2. Adjustment Program Requirement

Adjustment Name	Paragraph	Adjustment Program
Power Supply Adjustment	2-8	Not Required
Sense Amp DC Offset Adjustment	2-9	Not Required
DC Bias Level Adjustment	2-10	Required
Test Signal Level/Monitor Adj.	2-11	Required
Impedance measurement Adjustment	2-12	Required

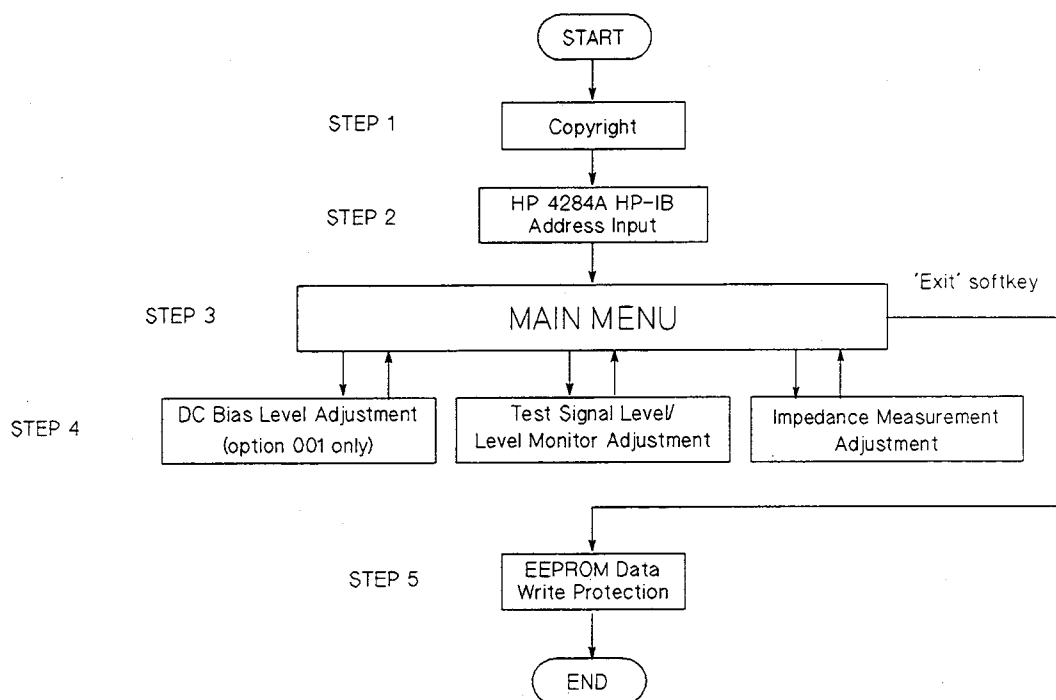
Paragraph 2-7-1 gives general information about the adjustment program. Paragraph 2-7-2 gives the initial operating procedure for the adjustment program. Paragraph 2-7-3 gives the adjustment program closing procedure.

2-7-1. GENERAL INFORMATION

Table 2-3 lists the adjustment program specifications. Figure 2-1 shows the adjustment program flow.

Table 2-3. Adjustment Program Specification

HP Part Number:	04284-65001 (5 inch floppy disk) 04284-65008 (3.5 inch floppy disk)
Language:	HP BASIC (rev. 5.0 and above)
Binary Requirement:	GRAPH, GRAPHX, HPIB, MAT, KBD, CLOCK, ERR, IO, CRTA, COMPLEX, CRTX (HP BASIC rev. 5.0)
Computer Requirement:	HP 9000 series 200 or series 300 computer with more than 1 M byte of RAM.
Write Protection:	Adjustment program is not write protected. Using a backup copy for adjustment program is recommended. Do not copy the program for purposes other than backup.
Adjustment for Options:	Adjustment program automatically identifies the HP 4284A's Option 001 and Option 006, and perform the adjustment according to the Options installed.



STEP1: Copyright and other information are displayed.

STEP2: The HP 4284A's HP-IB address must be registered to the adjustment program to control the HP 4284A by HP-IB.

STEP3: Adjustments can be selected using the softkeys. The program is finished by pressing the 'Exit' softkey.

STEP4: Each adjustment is performed.

STEP5: EEPROM write protection is confirmed.

Figure 2-1. Adjustment Program Flow

2-7-2. INITIAL OPERATING PROCEDURE

This paragraph gives the procedure to perform before the Adjustments.

EQUIPMENT:

Adjustment Program Disc (5 inch)
Computer
HP-IB Cable

PN 04284-65001
HP 9000 Series 200 Model 226
HP 10833A

PROCEDURE:

1. Turn the HP 4284A OFF and remove the A7 board assembly.
2. Set the HP 4284A's EEPROM write protect jumper (A7W2) from the normal position (N) to the test position.
3. Install the A7 board assembly into the HP 4284A.
4. Connect the HP 4284A, HP 3458A and the Computer using the HP-IB Cables. The computer's interface select code must be set to 7. Figure 2-2 shows the setup.

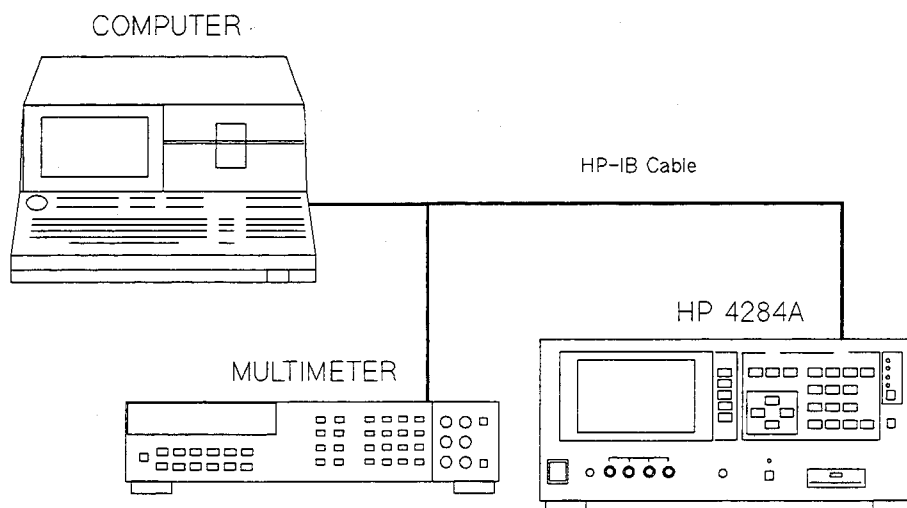


Figure 2-2. Adjustment Program Setup

5. Turn the HP 4284A, HP 3458A, and computer ON.
6. Change the HP 3458A's HP-IB address, if it is same as the HP 4284A's.
7. Boot up BASIC and load the necessary binary files in the computer. The necessary **BASIC BIN**aries for revision 5.0 are as follows.

**GRAPH, GRAPHX, IO, MAT, KBD, CLOCK,
ERR, HPIB, CRTA, COMPLEX, CRTX**

8. Load the calibration program in the computer, the file name is "ADJ_4284A".

NOTE

Do not remove the Adjustment Program Disk from the computer while the adjustment program is running.

9. Press the computer's **RUN** key, then copyright and other information are displayed. Press the '**Next Step**' softkey to continue the program.

NOTE

When the computer cannot access the HP 4284A, the HP-IB address registration display appears. Enter the HP 4284A's HP-IB address using the numeric keys and the '**Enter**' softkey.

10. After the copyright and other information are displayed, the Main Menu will be displayed. In the main menu, you can select the necessary adjustments using the softkeys.

NOTE

When you perform the adjustments, refer to paragraph 2-10 DC Bias Level Adjustment, 2-11 Test Signal Level/Level Monitor Adjustment and 2-12 Impedance Measurement Adjustment.

2-7-3. CLOSING PROCEDURE

This paragraph gives the procedure to finish the adjustment program. When the adjustment program is finished, HP 4284A's calibration data must be write protected.

1. The Main Menu is displayed on the controller's screen. Press the '**Exit**' softkey to finish the calibration program. Then the write protect display will appear.
2. Turn the HP 4284A OFF.
3. Replace the HP 4284A's EEPROM write protect jumper (A7W2) to its Normal position (N).
4. Replace the shield plate and the top cover.
5. Turn the HP 4284A ON.
6. Press the '**Ready**' softkey to examine the write protection and finish the adjustment program.

2-11. TEST SIGNAL LEVEL/LEVEL MONITOR ADJUSTMENT

This adjustment sets the signal source output voltage, then updates the EEPROM calibration data to set the test signal level and test signal level monitor reading.

EQUIPMENT:

Computer	HP 9826A
Multimeter	HP 3458A
HP-IB Cable	HP 10833A
Resistor 100 ohm	HP PN 04284-65004
Interface Box	HP PN 04284-65007
BNC(m) to BNC(m) Cable (30cm)	HP PN 8120-1838
BNC(f) to Dual Banana Plug Adapter	HP PN 1251-2277

PROCEDURE:

1. Display the adjustment program's main menu, referring to paragraph 2-7-2, INITIAL OPERATING PROCEDURE.
2. Press the 'Adj.2' softkey to select the Test Signal Level/Level Monitor Adjustment.

NOTE

When the computer cannot access the HP 3458A, the HP-IB address registration display appears. Enter the HP 3458A's HP-IB address using the numeric keys and the 'Enter' softkey.

3. Perform the signal source adjustment according to the program's instruction. Figure 2-11 shows the adjustment setup, Figure 2-12 shows the location of A5R11 (**OSC LVL**).

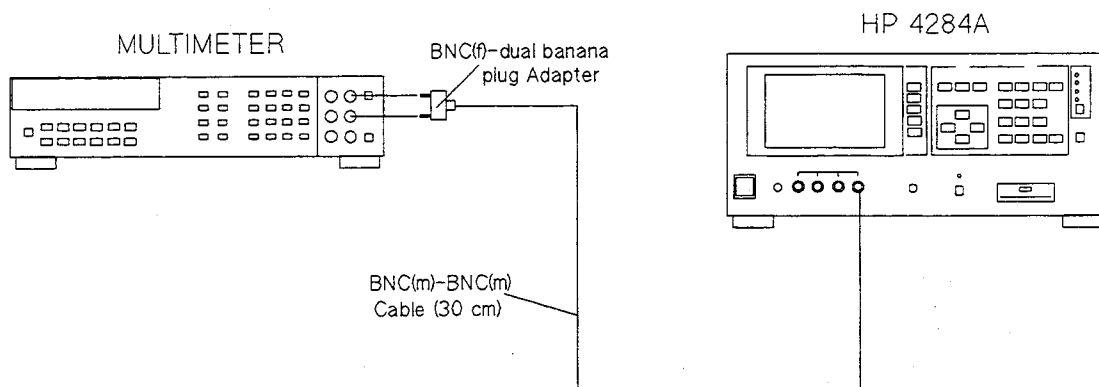


Figure 2-11. Signal Source Adjustment Setup

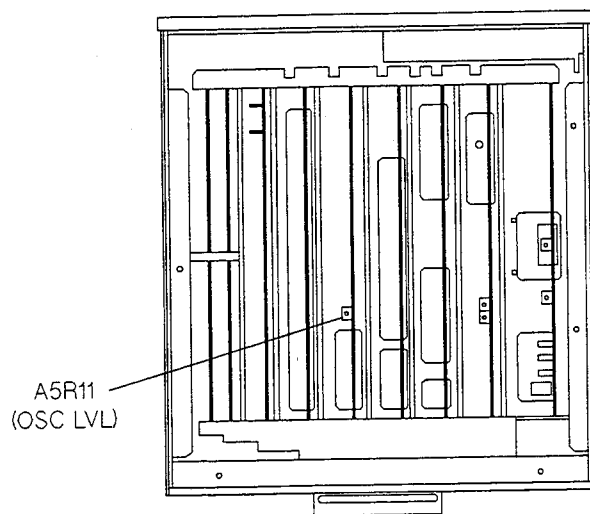
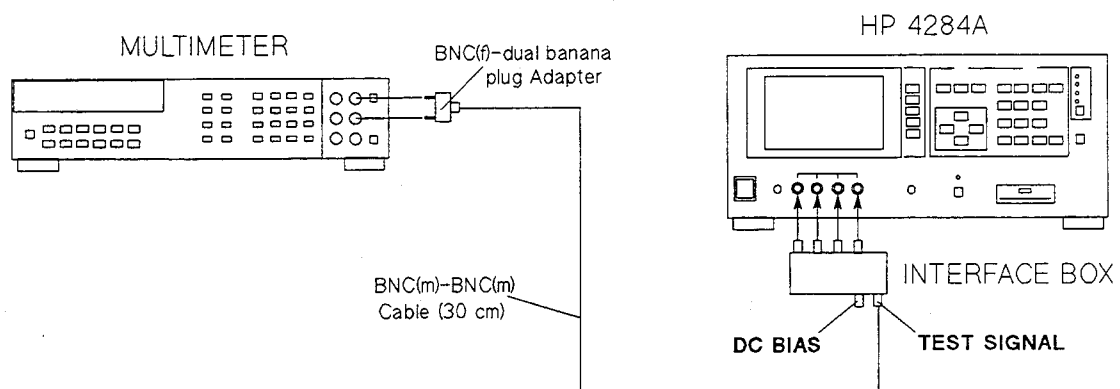


Figure 2-12. Signal Source Adjustment Location

4. Perform the test signal level/level monitor adjustment (EEPROM data updating) according to the program's instruction. Figure 2-13 shows the adjustment setup.

(1) Test Signal Level Adjustment Setup



(2) Test Signal Level Monitor Adjustment Setup

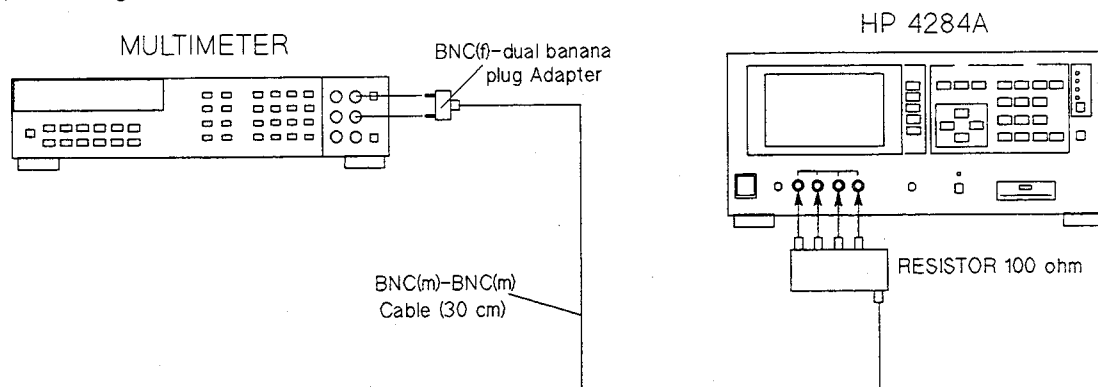


Figure 2-13. Test Signal Level/Level Monitor Adjustment Setup

2-12. IMPEDANCE MEASUREMENT ADJUSTMENT

This adjustment minimizes the null amplifier DC offset and the zero offset, and then updates the EEPROM calibration data to optimize the impedance measurement accuracy.

NOTE

All other adjustments must have been completed before performing this adjustment.

EQUIPMENT:

Computer	HP 9826A
Multimeter	HP 3458A
HP-IB Cable	HP 10833A
2 Alligator Clips to 1 Dual Banana Plug	
Test Lead	HP 11002A
Calibration R-L Standard	HP 16074A
Adapter BNC(f) to BNC(f)	HP PN 1250-0080 4 ea.
Test Leads (1 m)	HP 16048A
Test Leads (2 m)	HP 16048D (Option 006 only)
Test Leads (4 m)	HP 16048E (Option 006 only)

PROCEDURE:

1. Display the adjustment program's main menu, referring to paragraph 2-7-2, INITIAL OPERATING PROCEDURE.
2. Press the 'Adj.3' softkey to select the Impedance Measurement Adjustment.

NOTE

When the computer cannot access the HP 3458A, the HP-IB address registration display appears. Enter the HP 3458A's HP-IB address using the numeric keys and the 'Enter' softkey.

3. Perform the null amplifier DC offset adjustment according to the program's instruction. Figure 2-14 shows the adjustment setup, Figure 2-15 shows the A2TP3 (**X30**), A2TP4 (**GND**) and A2R123 (**NULL AMP VOS ADJ**) locations.

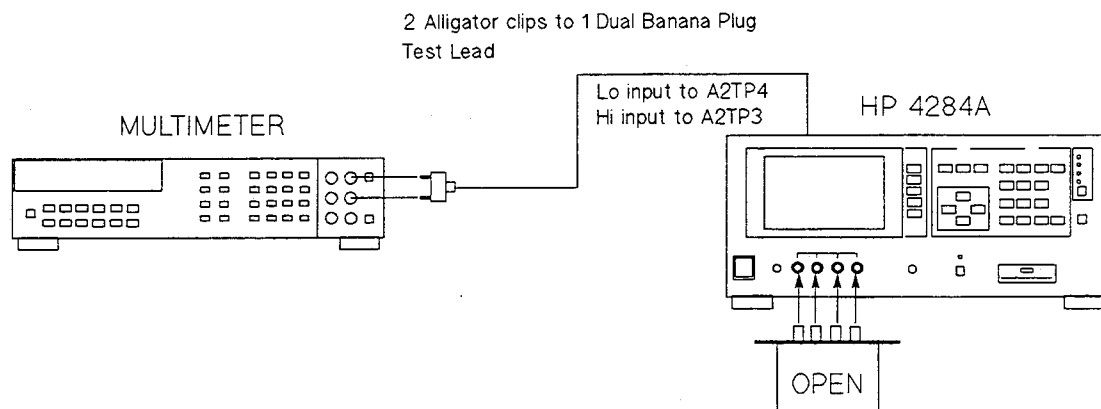


Figure 2-14. Null Amplifier DC Offset Adjustment Setup

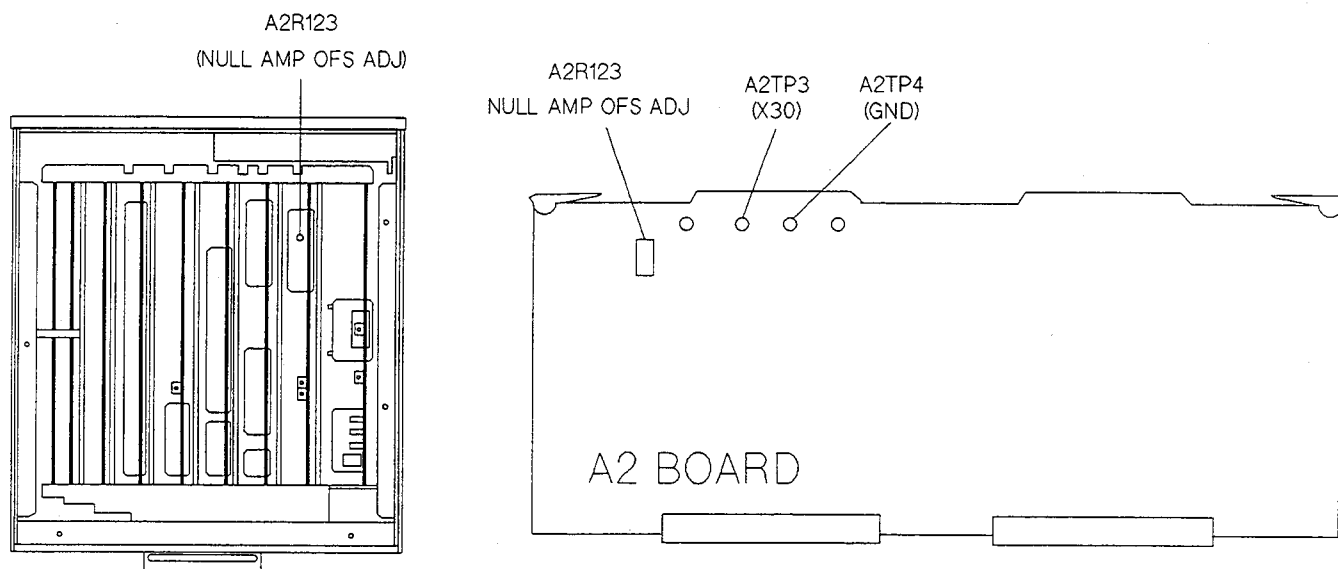


Figure 2-15. Null Amplifier DC Offset Adjustment Location

4. Perform the zero offset adjustment according to the program instruction. Figure 2-16 shows the A2R224 (0 DEG) and A2R324 (90 DEG) locations.

NOTE

The Top Shield Plate upon A2 through A7 board must be replaced when performing the zero offset adjustment.

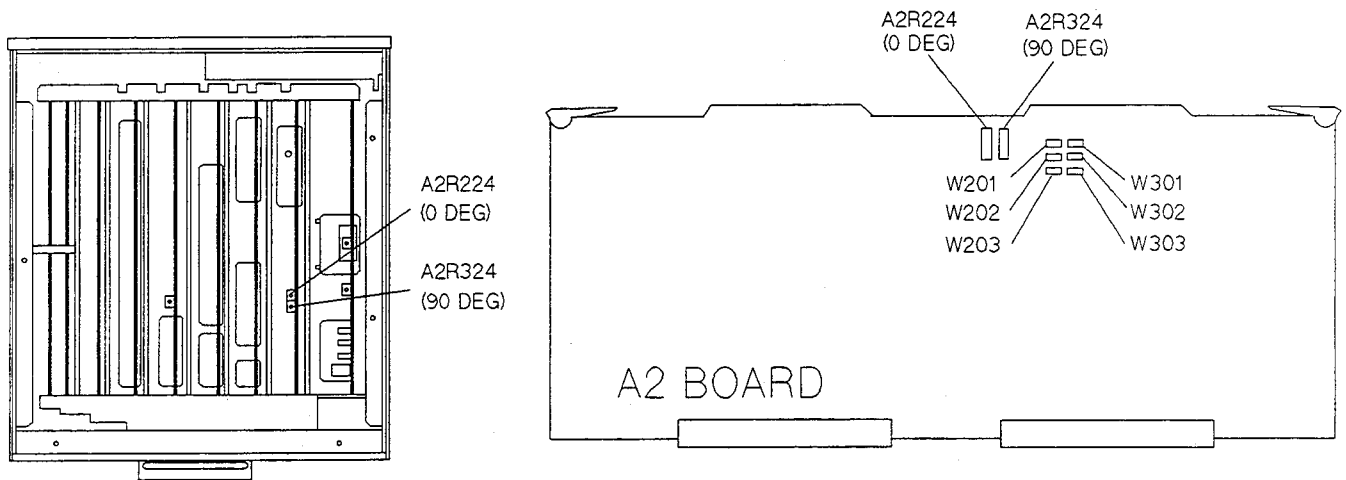


Figure 2-16. Zero Offset Adjustment Location

NOTE

If R224 and R324 cannot be adjusted, change W201, W202, W203, W301, W302, and W303 jumper settings and try again. W201, W202 and W203 are related to R224. W301, W302 and W303 are related to R324. Figure 2-17 shows the relation between the jumper settings and the adjustable range. After changing the jumper settings, press the 'Retry' softkey to reset the HP 4284A's adjustment conditions.

JUMPER SETTING	DECREASE ← G READING → INCREASE
W201  W202  W203 	FCW → FCCW (R224 SETTING)
W201  W202  W203 	FCCW → FCW (R224 SETTING)
W201  W202  W203 	(R224 SETTING) → FCCW
W201  W202  W203 	(R224 SETTING) → FCW

JUMPER SETTING	INCREASE ← B READING → DECREASE
W301  W302  W303 	FCW → FCCW (R324 SETTING)
W301  W302  W303 	FCCW → FCW (R324 SETTING)
W301  W302  W303 	(R324 SETTING) → FCCW
W301  W302  W303 	(R324 SETTING) → FCW

Figure 2-17. Jumper Settings VS. Adjustable Range

5. Perform the impedance measurement adjustment (EEPROM data updating) according to the program instruction. Figure 2-18 shows the adjustment setup.

HP 4284A

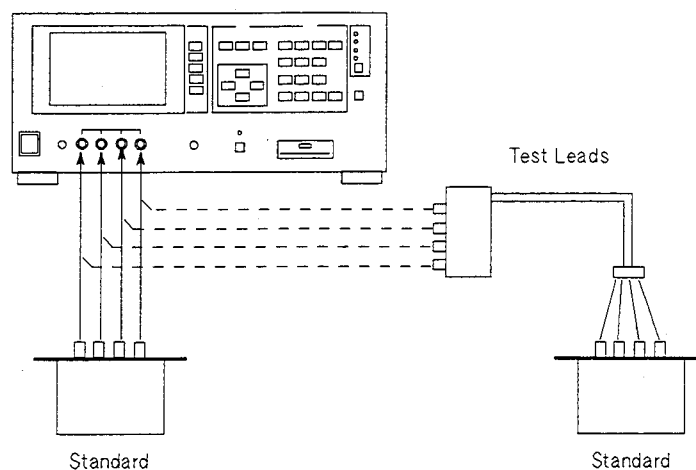


Figure 2-18. Impedance Measurement Adjustment Setup