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HP References in this Manual

This manual may contain references to HP or Hewlett-Packard. Please note that Hewlett-Packard's former test and measurement, semiconductor products and chemical analysis businesses are now part of Agilent Technologies. We have made no changes to this manual copy. In other documentation, to reduce potential confusion, the only change to product numbers and names has been in the company name prefix: where a product number/name was HP XXXX the current name/number is now Agilent XXXX. For example, model number HP8648A is now model number Agilent 8648A.

Installation Note

HP 70860A High-Speed Controller Board Upgrade Kit



**HP Part No. 70900-90160 Supersedes: None
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HP 70860A High-Speed Controller Board Upgrade Kit

INSTRUMENTS AFFECTED: HP 70900A Local Oscillator
SERIAL NUMBERS: 0000A00000/9999A99999
TO BE PERFORMED BY: Customer or HP-Qualified Personnel

Purpose

This installation note contains necessary information for installing the A1 High-Speed Controller Board Assembly into an HP 70900A Local Oscillator module.

The High-Speed Controller Board Assembly requires LO firmware version date code 891102 or later. These firmware versions are required to support new modules and systems introduced after 1 September 1989.

The High-Speed Controller Board Assembly comprises two boards: A1A1 Host Board Assembly and A1A2 RAM/ROM Board Assembly. The central processing unit (CPU) and local oscillator interfaces, such as HP-IB and HP-MSIB, are housed on the host board assembly. The programmed ROM and RAM are housed on the RAM/ROM board assembly.

The A1A2 RAM/ROM Board Assembly can be detached from the A1A1 Host Board Assembly. Future installation of firmware upgrades and memory enhancements can be accomplished by replacing only the RAM/ROM board assembly.

See the *HP 71000 Modular Spectrum Analyzer Installation and Verification Manual* for information about how to load and run the System Diagnostics program that has been modified for this version of firmware.

Parts Supplied

Table 1 lists the parts included in the HP 70900A High-Speed Controller Board Upgrade Kit (HP model number 70860A).

Table 1-1.
HP 70900A High-Speed Controller Board
Upgrade Kit Contents

Item	Quantity	Description
1	1	A1A1 Host Board Assy
2	1	A1A2 RAM/ROM Board Assy
3	2	Screw, M3 × 0.5 × 12 MM
4	1	Screw, M3 × 0.5 × 23 MM
5	1	Dynamic Support
6	1	Standoff, Green
7	1	Insulator, Plastic Sheet
8		System Diagnostics
	1	3-1/2 inch Disk
9		Operation Verification
	1	3-1/2 inch Disks
10	1	Programming Manual
11	1	Operation Manual
12	1	Installation Note

Items 5, 6, and 7 may not be required if the HP 70900A being modified is serial number 2643A01194 or higher. In this case these items can be discarded.

Replacement Procedure

Caution To avoid blowing the mainframe line fuse, set the mainframe LINE switch to OFF before removing or replacing any module. Use electrostatic discharge (ESD) precautions when removing or replacing the HP 70900A Local Oscillator board assemblies.

Removing the HP 70900A Local Oscillator

1. Set the mainframe LINE switch to OFF. See Figure 1.
2. Disconnect the local oscillator rear-panel cables.
3. Open the front-panel door and use an 8 mm hex-ball driver (HP part number 8710-1307) to loosen the hex-nut latch of the local oscillator module.
4. Once the latch is free, push against the module rear panel then slide the module out of the mainframe.

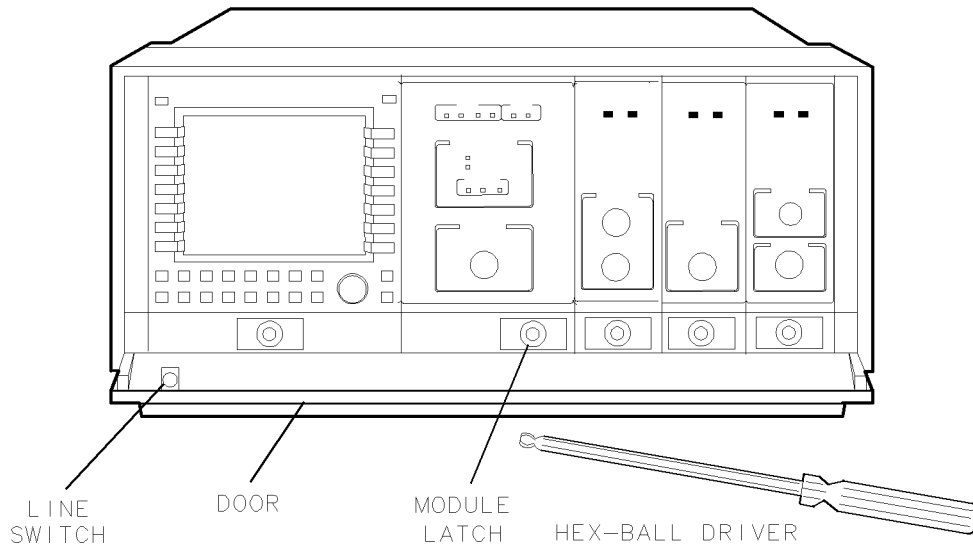


Figure 1. HP 70900A Local Oscillator Removal

Removing the HP 70900A Local Oscillator Cover

1. Remove the four screws located on the top of the cover.
2. Loosen the two screws on each side of the module cover.
3. Lift the cover up and off of the module.

Removing the Controller Board Assembly

The A1 Controller Board Assembly is located on the right-hand side and runs the full length of the module.

1. Remove the three screws along the top edge of the controller board assembly. See Figure 2.

Do not misplace the three plastic standoffs; they are required to install the new controller board assembly. Also, avoid disturbing the position of the coaxial cables or wire harnesses on the top of the module.

2. Disconnect W11 four-wire cable assembly from A1J1 at the rear of the controller board assembly and W14 ribbon cable from A1J5 at the front of the controller board assembly. Carefully lift the board assembly vertically out of the two edge connectors located at the bottom of the board assembly.
3. Disconnect W20 flex cable from A1J4, located at the rear of the controller board assembly, and set the board aside.
4. Remove the mounting screw from the top-right edge of the A2 Video Processor Board Assembly.

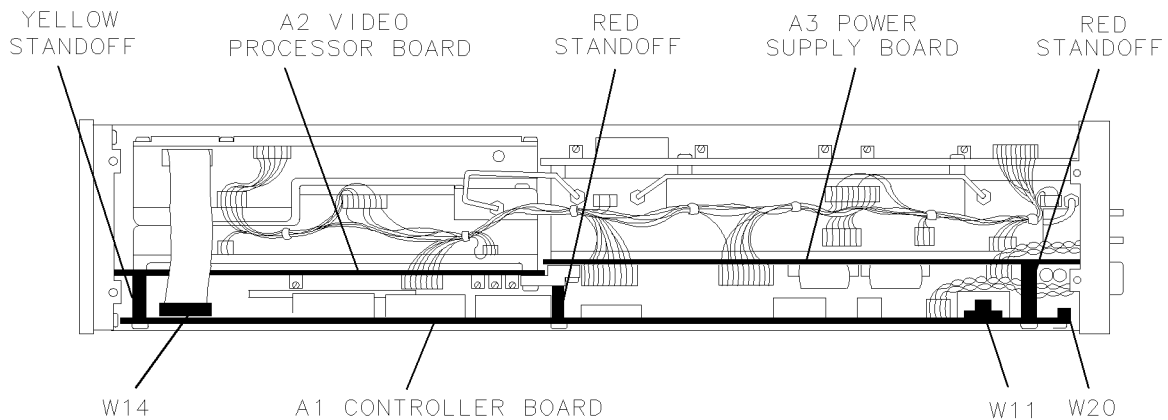


Figure 2. A1 Controller Board Assembly Removal

Installation of Module Cover-Insulator

To prevent the local oscillator module cover from making contact with the new A1 High-Speed Controller Board Assembly, a clear-plastic insulator is shipped with the upgrade kit. Attach this insulator to the inside of the module cover.

Note On some LO module covers, the insulator may have already been installed. This insulator must be replaced with the new-style insulator provided with this kit (HP part number 70900-00005). Remove the old-style insulator to allow placement of the new-style insulator. If it is impossible to remove this insulator, please contact HP Signal Analysis Division, Product Support Department.

The following procedure may be used to install the cover insulator.

1. Lay the local oscillator module cover on its right-hand side. (This is the side with the address-switch slots closest to the edge.) See Figure 3.
2. Remove the protective plastic and adhesive backing from the clear plastic cover-insulator.
3. With the adhesive side of the insulator toward the cover, center the insulator between the two ends and place the upper edge of the insulator against the upper inside corner of the cover.
4. Make sure the lip on the insulator conforms with the lip on the module cover, then press the insulator against the module cover to ensure complete contact.

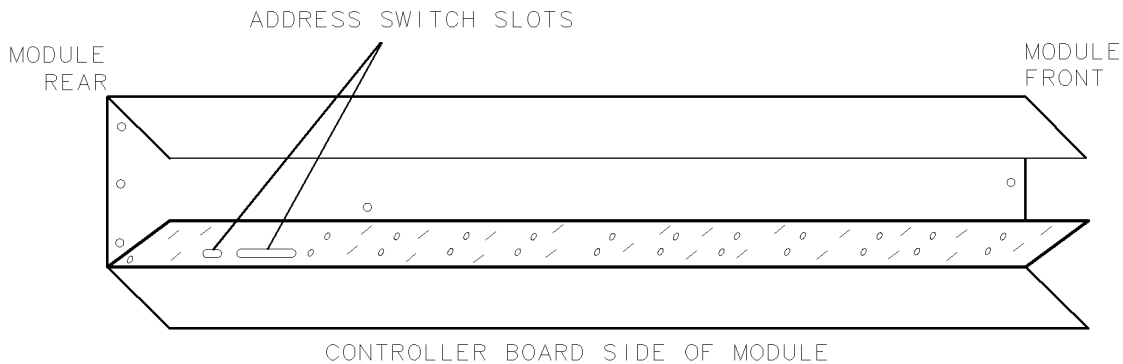


Figure 3. Module Cover Insulator Installation

High-Speed Controller Board Assembly Installation

Caution To avoid shorting out the board-mounted battery, do not set the A1 Controller Board Assembly on any conductive surfaces.

1. Use the two M3.0 × 0.5 × 12 mm screws shipped with the upgrade kit to install the dynamic support (HP part number 70900-20095) to both A2 Video Processor Board Assembly and A3 Power Supply Board Assembly. The dynamic support is mounted on the top edge of the two board assemblies where they adjoin. It is keyed in such a way as to fit properly in one position. See Figure 4.

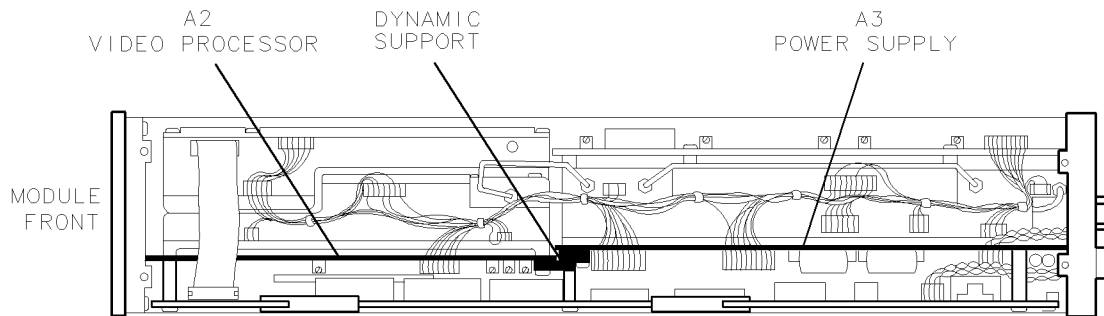


Figure 4. Dynamic Support Installation

2. Connect the W20 flex cable to J4 of the A1A1 Host Board Assembly. See Figure 5.
3. Insert the board assembly vertically into the two edge connectors of the motherboard and press the board assembly firmly into place.
4. Reconnect W11 four-wire cable assembly to A1A1J1. The wiring of the cable should be oriented towards the inside of the module.
5. Replace the yellow standoff and screw into the mounting hole at the front of the A1A1 Host Board Assembly. Replace the red standoff and screw into the mounting hole at the rear of the A1A1 assembly.
6. If the A1A2 RAM/ROM Board Assembly is not already installed into the A1A1 Host Board Assembly, do so by sliding the RAM/ROM board assembly vertically into the guides of the host board, then push the board-extractor clips into the down position.
7. Install the M3 × 0.5 × 23 MM screw provided with the upgrade kit through the hole on the RAM/ROM board assembly, through the green standoff, and into the remaining hole on the dynamic support.
8. Reconnect the W14 ribbon cable to A1A1J5. See Figure 5.
9. Being careful not to allow the cover to contact the controller board, replace the local oscillator module cover. Secure it with two screws on each side and four screws on the top.
10. Set the module address and control switches to the proper positions. Refer to the *HP 70900A Local Oscillator Installation and Verification Manual* for information on switch settings.
11. Replace the local oscillator module into the mainframe, secure it with the hex-nut latch, and reconnect the rear-panel cables. Refer to the *HP 70900A Local Oscillator Installation and Verification Manual* for examples of rear panel-cable connections.

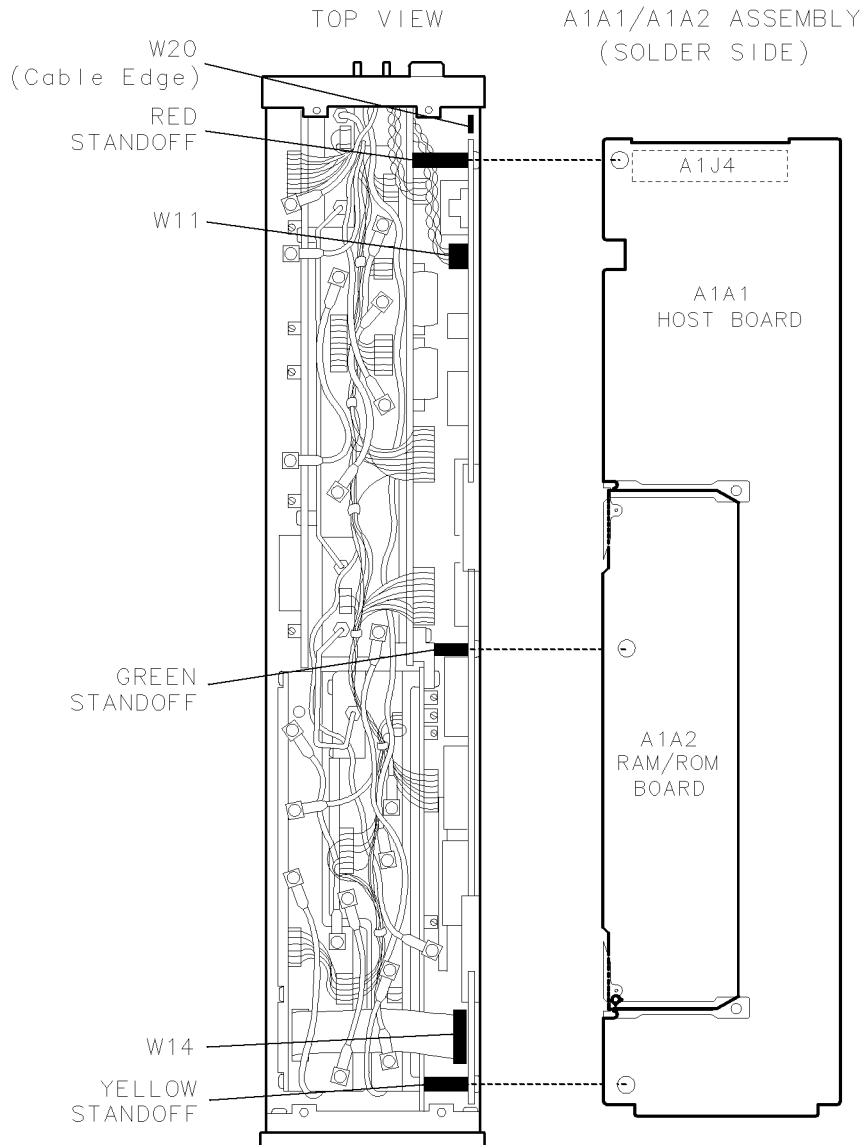


Figure 5. High-Speed Controller Board Assembly Installation

Loading the Module Serial Number into RAM

When the controller board assembly is changed, the serial number of the HP 70900A Local Oscillator must be reloaded into the module RAM. The serial number is on a label attached to the front frame near the hex-nut latch. With the instrument LINE switch set to OFF, open the front-panel door to view the serial number. See Figure 1 at the beginning of this document.

The serial number may be loaded into RAM by using one of the two following methods.

Front-Panel Method

1. Use the system display keys and select **MENU**, **MISC**, **MORE**, and **COMMAND**.
2. Use the display knob to position the reverse video over the capital letter "S", then press **SELECT CHAR**.

3. Repeat the previous step to enter the capital letters **E** and **R**, and **,**.
4. Use the numeric keys on the display to enter the serial number of the HP 70900A Local Oscillator. Use the knob as in step 2 to enter the alpha characters of the serial number.
5. Use the knob as in step 2 to enter **,** then **;**.
6. View the result at the lower left-hand corner of the CRT display screen. It should read SER 'xxxxAxxxxx'; (where xxxxAxxxxx is the serial number of the module).
7. Verify that the serial number is correct, then press **ENTER COMMAND**. The serial number entered should be displayed in the user message block.

HP 9000 Series 200 Method

1. View the HP-IB address of the HP 70900A Local Oscillator by pressing **(DISPLAY)**, then **Address Map**. Rotate the display knob until the local oscillator address is located and the ACT light comes on. Refer to the *HP 71000 Modular Spectrum Analyzer Operation Manual* to determine the HP-IB address of the local oscillator.

2. Using the HP 9000 Series 200 controller, type in the following command:

```
OUTPUT zzz; "SER 'xxxxAxxxxx';"
```

Where zzz represents the HP-IB numeric address and xxxxAxxxxx is the serial number of the HP 70900A.

3. Press **(EXECUTE)** and verify that the serial number has been stored in RAM by typing in the following command:

```
OUTPUT zzz; "SER?;"
```

Press **(EXECUTE)**. The serial number should be displayed in the user message block of the system display.