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# **Quick Start Guide**

**HP 70340A/70341A**

**Signal Generators**



**HP Part No. 5960-7095  
Printed in USA September 1992**

**Edition B.0.0**

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**CAUTION**     The *CAUTION* sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in damage to or destruction of the product or the user's work. Do not proceed beyond a *CAUTION* sign until the indicated conditions are fully understood and met.

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**WARNING**     The *WARNING* sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury to the user. Do not proceed beyond a *WARNING* sign until the indicated conditions are fully understood and met.

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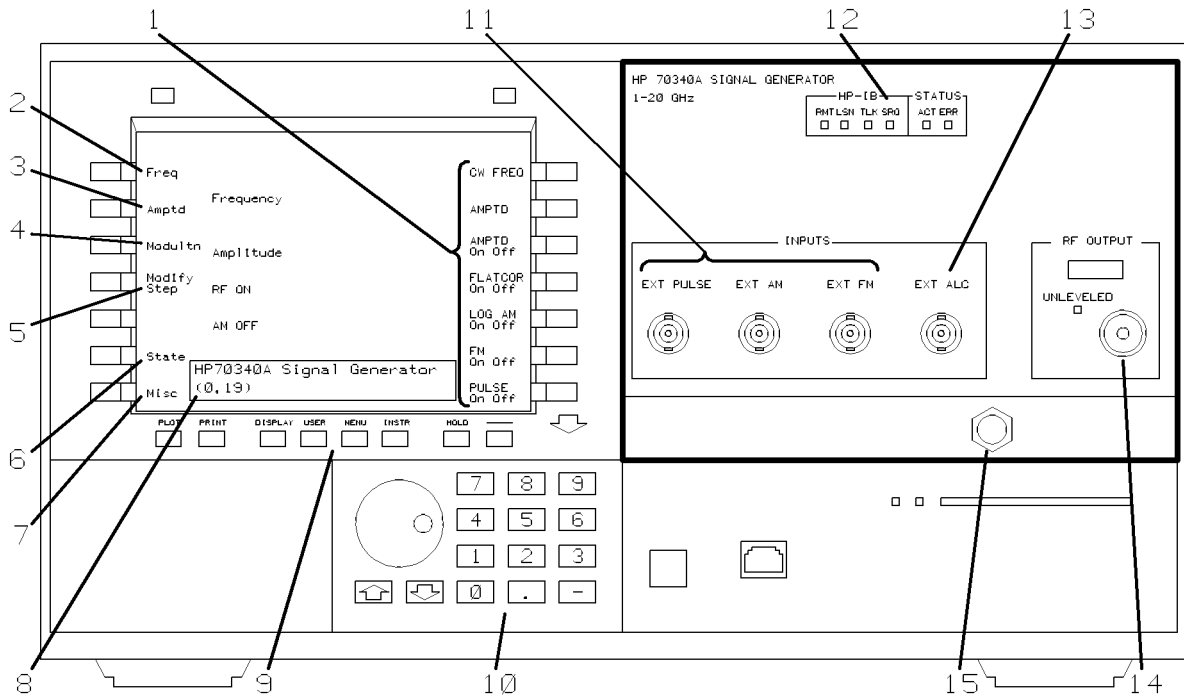
## General Safety Considerations

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- WARNING**
- The instructions in this document are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing unless you are qualified to do so.
  - The opening of covers or removal of parts is likely to expose dangerous voltages. Disconnect the instrument from all voltage sources while it is being opened.
  - The power cord is connected to internal capacitors that may remain live for five seconds after disconnecting the plug from its power supply.
  - This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the instrument is likely to make the instrument dangerous. Intentional interruption is prohibited.
  - For continued protection against fire hazard, replace fuse only with same type and ratings, (type nA/nV). The use of other fuses or materials is prohibited.
- 

- WARNING**
- Before this instrument is switched on, make sure it has been properly grounded through the protective conductor of the ac power cable to a socket outlet provided with protective earth contact.  
  
Any interruption of the protective (grounding) conductor, inside or outside the instrument, or disconnection of the protective earth terminal can result in personal injury.
  - Before this instrument is switched on, make sure its primary power circuitry has been adapted to the voltage of the ac power source.  
  
Failure to set the ac power input to the correct voltage could cause damage to the instrument when the ac power cable is plugged in.
-

# The Signal Generator at a Glance





The HP 70340A Synthesized Signal Generator

1. Softkeys turn signal generator **functions** and menus on and off and/or allow data entry.

2. The **Frequency menu** accesses the CW frequency and the frequency multiplier value of the RF output signal.

3. The **Amplitude menu** accesses the output power level functions and methods of RF output signal leveling.

4. The **Modulation menu** accesses modulation type (FM, Log AM, and pulse modulation).

5. The **Modify Step menu** lets you change the knob increment value or the   keys step size.

6. The **State menu** saves/recalls most of the signal generator's operating parameters to/from any of nine nonvolatile register locations.

7. The **Miscellaneous menu** accesses signal generator features (such as service functions) which are less frequently used.

8. The **data entry box** indicates the current active parameter, if any, and its value.

9. The **display keys** allow you to choose the instrument front panel and access error messages.

10. The **data entry keys** are used to enter and modify function parameters.

11. The **modulation inputs** provide BNC connections for external modulating signals.

12. The **HP-IB and Status LEDs** indicate the state of the instrument: when it is in front panel mode or in HP-IB mode, and when an error message exists.

13. The **External Automatic Level Control** connector is used as the feedback path to the signal generator when RF output power is leveled externally.

14. The **RF OUTPUT** connector is the signal generator's main RF output. The UNLEVELED LED indicates whether or not output power is leveled.

15. The Hex Nut **Latch** allows easy installation/removal of the signal generator module.

The front panel procedures and examples in this book are valid whether or not the HP 70341A is installed in the Modular Measurement System, MMS. For an illustration of the HP 70340A with the HP 70341A, refer to the *HP 70340A/41A User's Guide*.

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## In This Book

This book provides a way for you to start using the HP 70340A signal generator (and HP 70341A frequency extension module) quickly and productively. It gives you an overview of some basic signal generator features while making you aware of other more complex features.

- “The Signal Generator at a Glance” shows you the various controls and features of the signal generator and mainframe/display front panel.
- “To Get Started” describes how to power-up the MMS and set up the signal generator front panel display.
- “To Use the Front Panel Display” explains the signal generator's menu structure and how to enter function parameters.
- “To Generate a CW Signal” shows you how to generate a simple signal.




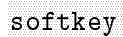
- “If You Encounter a Problem” is included in case you run into any difficulties operating the signal generator.

### Conventions

The following conventions are used in this quick start guide:

signal generator indicates either the HP 70340A, alone, or the HP 70340A and HP 70341A, together.

 represents a physical key located on the display front panel. The label of the key on your display may differ from the HP 70004A display key labels used in this book.

 indicates a key on the display screen that changes according to the display or signal generator firmware.

screen text indicates text that appears on the display screen.

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**Note** For simplicity, the HP 70004A display front panel layout and labeling are used throughout the text and figures in this book. If you are not using an HP 70004A display in full screen mode, your front panel layout and labeling may differ.

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# The HP 70340A/41A Quick Start Guide

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## To Get Started

These steps provide you with the information necessary to safely power-on the signal generator and set up the front panel for local operation. The front panel of the signal generator is your display's front panel. When you use the HP 70340A/41A in local operation, its front panel menus and functions appear on the display screen.

1. Install the HP 70340A according to chapter 1 of the *HP 70340A/41A User's Guide* and, if applicable, the HP 70341A according to the *HP 70341A Installation Guide*.
2. **Check that the LINE VOLTAGE SELECTION switches of your mainframes/displays are set to the voltage of your power source.**

The LINE VOLTAGE SELECTOR switches are located as follows:

- a. On the bottom of the HP 70001A mainframe
  - b. On the left side of the HP 70004A stand-alone display
  - c. On the rear panel of the HP 70205A or HP 70206A display
3. **Set the system LINE (Mains) switches to OFF.**
  4. **Check that the power cable is undamaged, and then connect it to the system and power source.**

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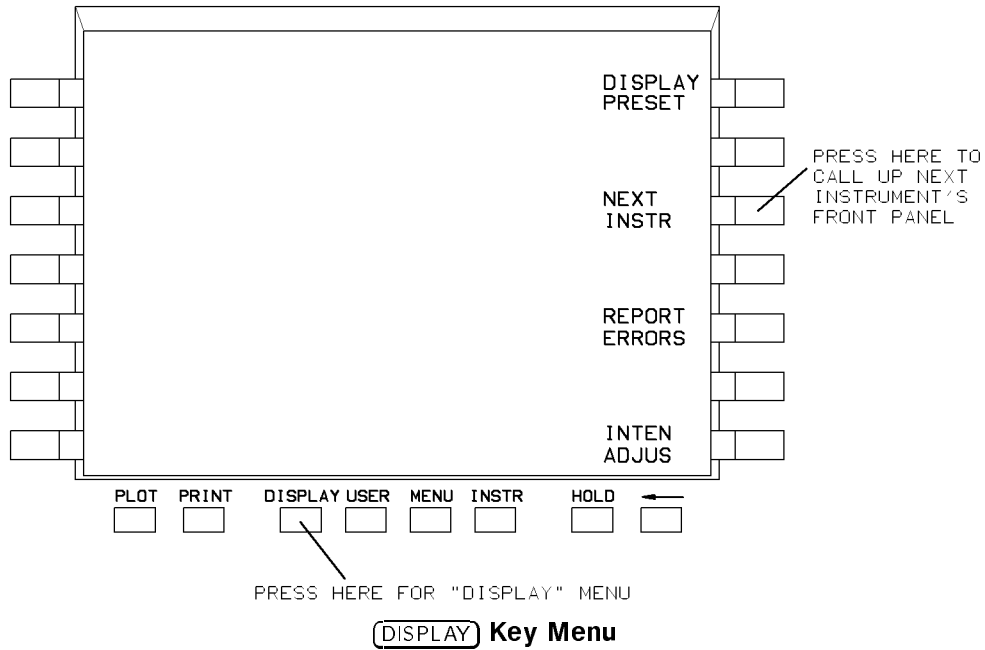
**Warning**      **This is a safety Class 1 product (that is, it is provided with a protective earth terminal). An uninterruptible safety earth ground must be provided through the power cable. Whenever it is likely that the ground is impaired, the product must be made inoperative.**

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5. **Set the mainframe/display LINE (Mains) switches to ON.**

When you turn the MMS on, the power lights come on and the ventilation fans start. It is normal for the HP 70340A/41A LEDs (including the **ERR** LEDs) to turn on during a power-up test. The **ERR** LEDs should be off, however, when the power-up test is complete.

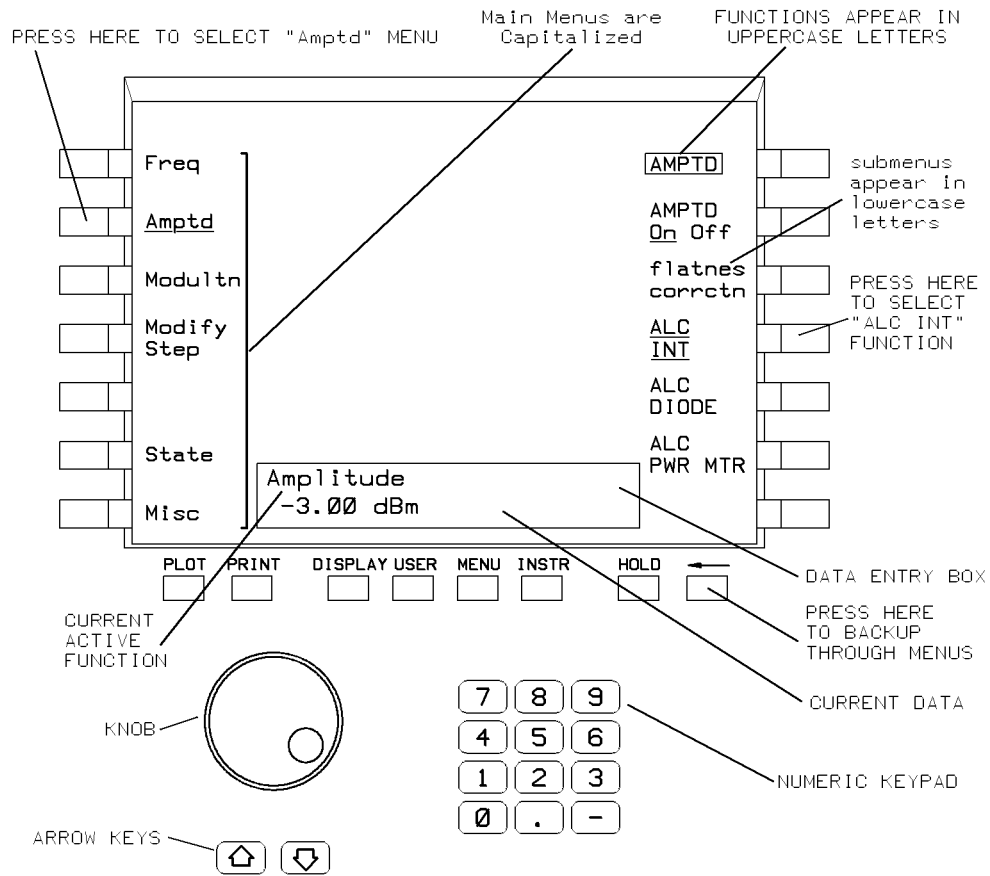
6. If the display does not show the HP 70340A front panel, press **DISPLAY**, **NEXT INSTR** (or **SELECT INSTR**) until the front panel of the HP 70340A is displayed, and then press **MENU** to display the main menu and function softkeys.



7. If you have problems with power-up of the signal generator, refer to “Power-Up Problems” in the section titled “If You Encounter a Problem” at the end of this book.

## To Use the Front Panel Display

This section is useful to you if you are unfamiliar with the MMS. It shows you how to maneuver about the signal generator's menus using the display front panel. In this section, the term "display" is used to indicate a front panel similar to that shown below.



**Signal Generator Menus and Functions**

- **You can select main menus from the left-hand side of the display.**





When a main menu is active, functions and submenus pertaining to the menu appear on the right-hand side of the display.

- **You can select functions from the right-hand side of the display.**

Function softkeys allow you to turn functions on and off, enter/modify data, and perform operations/routines.

- **You can also select submenus from the right-hand side of the display.**

Submenus access other functions, and possibly, other submenus.

- **Selecting MORE x of y (for example, MORE 1 of 2 or MORE 1 of 3) displays more functions under a menu.**
- **Selecting the  (backspace arrow) key retraces your steps backwards through the menus that you have chosen.**
- **The Knob,   keys,  key, and the numeric keypad provide ways to enter/modify data.**

For example, to enter an RF Output signal amplitude of 0 dBm using the numeric keypad, perform the following steps:

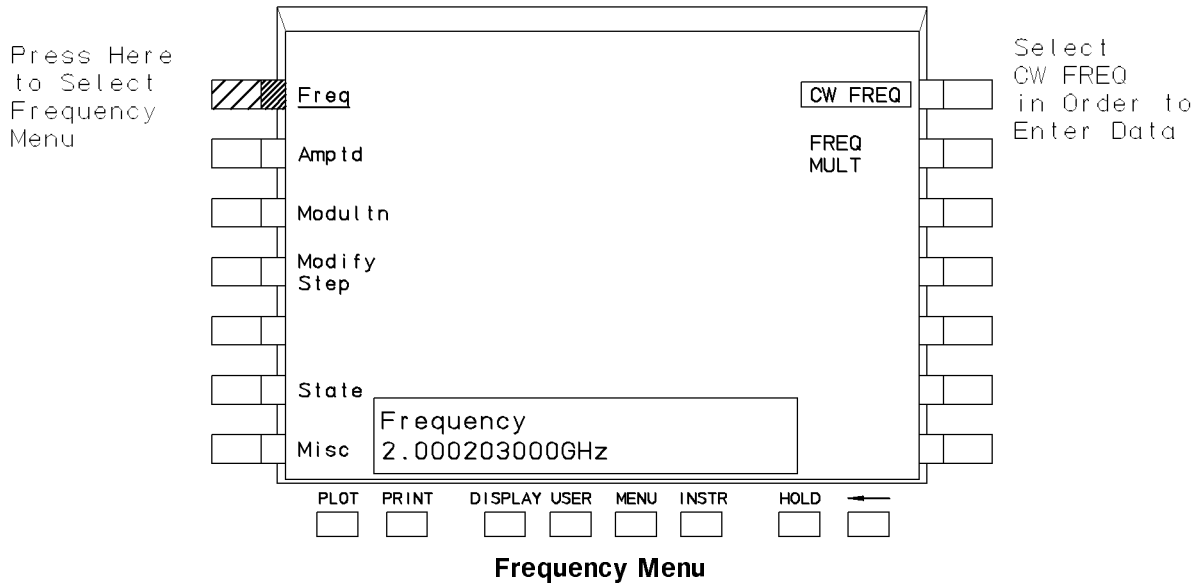
1. Press **Amptd** so that it is underscored.
2. If the **AMPLITUDE** softkey is not highlighted, press **AMPTD** so that it is highlighted.
3. Type **0** on the numeric keypad.
4. Press **dBm** to terminate the entry.

Similarly, to enter a frequency multiplier value of 5:

1. Press **Freq** so that it is underscored.
2. Press **FREQ MULT** so that it is highlighted.
3. Type **5** on the numeric keypad.
4. Press **ENTER** to terminate the entry.

## To Generate a CW Signal

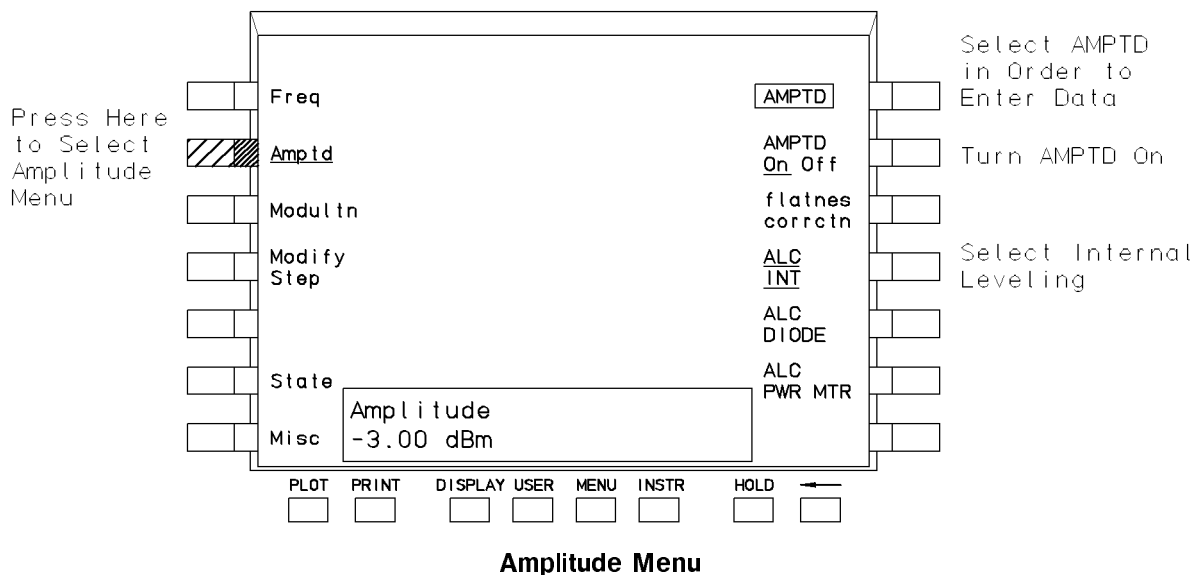
This section shows you how to generate the simplest signal that the signal generator can output: a CW (continuous wave) signal.



### 1. Set the desired CW frequency.

For example, perform the following procedure to set the output frequency to 2.000203 GHz.

- Press **Freq**.
- Press **CW FREQ** so that it is highlighted.
- Type **2**, **.**, **0**, **0**, **0**, **2**, **0**, **3** on the display's numeric keypad.
- Terminate the frequency entry by pressing **GHz**.



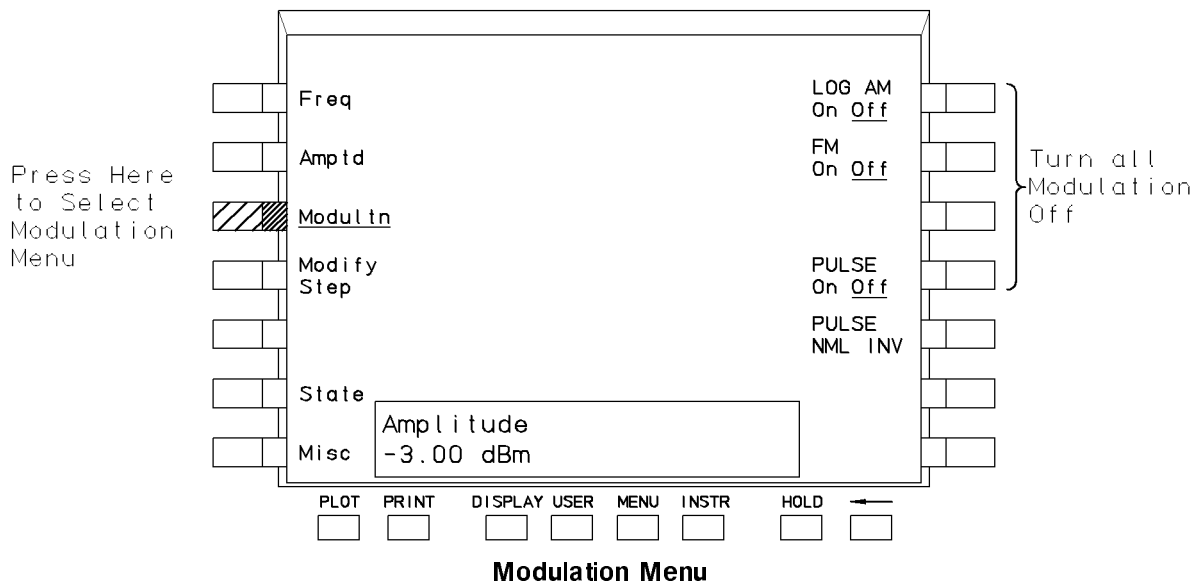


2. Turn on internal automatic leveling control, ALC INT, if it is not already on.
  - a. Press **Amptd**.
  - b. Press **ALC INT** so that it is underscored.
3. Set the desired RF output amplitude.

For example, perform the following procedure to set the RF output amplitude to  $-3$  dBm.

- a. Press (highlight) **AMPTD** if it is not already highlighted.
 

Note that, if the AMPTD function is already highlighted (active), selecting it again produces no effect.
  - b. Type **(-)**, **(3)** on the numeric keypad.
  - c. Terminate the amplitude entry by pressing **dBm**.
4. If **AMPTD On Off** is off, press the function so that **On** is underscored.



5. If necessary, turn off any modulation: **Log AM On Off**, **FM On Off**, or **PULSE On Off**, by selecting the **Modultn** menu and then pressing each function softkey so that **Off** is underscored.

Once you know how to generate a CW signal, generating a more complex signal consists of entering some additional function parameters and providing a modulating signal input to the signal generator.

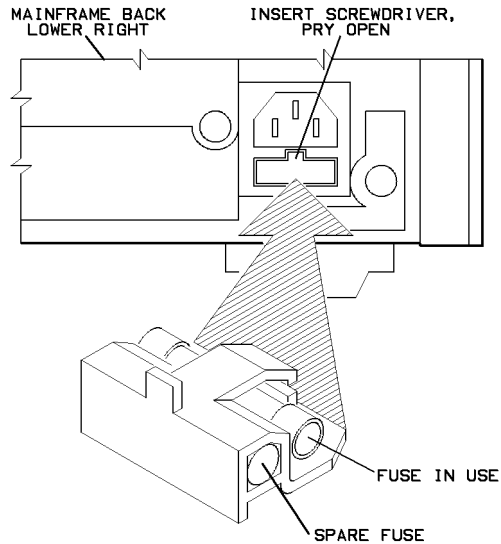
Additionally, you can use different kinds of signal leveling, or save and recall instrument states. These procedures and others are explained in the *HP 70340A/70341A User's Guide*.

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## If You Encounter a Problem

If you have difficulty using the HP 70340A/41A, check the following list of problems and associated troubleshooting procedures. Most problems are easily solvable. If, however, the problem that you encounter is not listed here, refer to the *HP 70340A/41A User's Guide* or the installation and verification manual for your mainframe/display. If necessary, contact your nearest Hewlett-Packard office for service.

### Power-up Problems



**Line Fuse Removal and Replacement**

**If the power light on the mainframe does not light and the instrument appears dead:**

- Check that the power cord is connected.
- Check that the mainframe fuse is good.

The metric 6.3A fuse is HP part number 2110-0703. Refer to the figure on the previous page.

**If the mainframe power light is on, but the ventilation fan does not start:**

1. Set the mainframe LINE (Mains) switch to OFF.
2. Check for blockage of the fan intakes at the bottom rear of the mainframe.

**If the signal generator ERR LED or the display E remains on after the power-up test is complete:**

- Check that the **ERR** LED or the display “E” is not flashing.

If the error indicators are flashing, the mainframe HP-MSIB, a module, or the HP-MSIB cables may be faulty.

- Check for secure HP-MSIB cable connections.

To Check the Error Queue:

1. Press the **DISPLAY** key.
2. Press the **REPORT ERRORS** function.



When **REPORT ERRORS** is active, the display shows the model number, description, and HP-MSIB address of the module that is reporting.

3. If necessary, press the **MORE ERRORS** function until the display shows “HP 70340A,” the signal generator’s column address, and the errors associated with it.
4. Press the display’s **MENU** key in order to exit the Error Report screen and return to the signal generator screen.

If the error is a transient one, it is cleared from memory once you exit the Error Report Screen.

5. If necessary, refer to the “Error Messages” chapter of the *HP 70340A User’s Guide* or your display manual for steps to correct or clear the error.

## Data Entry Problems

**If the data entry controls (Keypad, Knob, ,  keys) do not respond:**

- Check that the neither the **ENTRY HOLD** nor the **HOLD** function is enabled.

The **ENTRY HOLD** function is under the **Misc** menu. It is active when it appears in inverse video. The **HOLD** is on the display’s front panel. To turn these functions off, press (highlight) a function which has a numeric parameter associated with it.

- Check that the function which is active accepts data.

For instance, CW **FREQ** accepts data, but, **AMPTD On/Off** does not. The data entry controls do not respond if the function selected does not have data associated with it.

- Check that the signal generator is in local (not remote) operating mode.

Press the **LCL** key on the front panel of the display to return the instrument to local operating mode.

**If data is not accepted (displayed or output) by the signal generator:**

- Check that you are not setting the data outside of the signal generator's specified limits.

Refer to the Specification table in the *HP 70340A/41A User's Guide*.

- Check that the HP-MSIB addresses are set correctly if the HP 70341A is installed, and the data entered is a cw frequency between 0.01 and 1 GHz.

Refer to the *HP 70341A Installation Guide*.

- Check that the **ERR** LED is off.

Refer to the procedure, "To Check the Error Queue," in this section.

## Display Problems

**If the signal generator module does not appear on the display screen:**

1. Check that the HP-MSIB cables are connected if you are using multiple mainframes.
2. Press the **DISPLAY** key.
3. Press the **NEXT INSTR** softkey until the signal generator is displayed.

**Refer to the display's Operating Manual or Service Manual for operating and troubleshooting procedures.**

## RF Output Problems

- Check that the **AMPTD On Off** function is On.

The display indicates whether the function is on or off through the message "RF ON" or "RF OFF".

- Check that the modulation functions are properly set (ie. Log AM, FM, and Pulse Modulation).

These function softkeys are under the Modulation menu.

- Check the external modulating signal for problems.



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