Installation Note

Firmware Upgrade Kit E4400-60046 for HP ESG-1000A, -2000A, -3000A, -4000A, ESG-D1000A, -D2000A, -D3000A, -D4000A RF Synthesized Signal Generators

Contents

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Firmware Upgrade Kit E4400-60046 for HP ESG-1000A, -2000A, -3000A, -4000A, ESG-D1000A, -D2000A, -D3000A, -D4000A RF Synthesized Signal Generators

Product Affected:	HP ESG-1000A, -2000A, -3000A, -4000A ESG-D1000A, -D2000A, -D3000A, -D4000A RF Synthesized Signal Generators
Serial Numbers:	All
Options:	All
To Be Performed By:	[X] HP Service Center [X] Personnel qualified by HP (X) Customer
Estimated Installation Time:	1 hour
Estimated Verification Time:	1 minute

Introduction

The firmware revision is changed by downloading the updated firmware files via computer RS-232 interface. This installation note includes separate procedures for Unix, PC, Laptop, or Palmtop computers.

Installation Kit Parts List

Table 1. Firmware Upgrade Kit E4400-60046 Contents

Quantity	Description	Part Number
1	Firmware DOS disk upgrade	E4400-10002
1	Firmware Unix disk upgrade	E4400-10003
1	Installation note	E4400-90050

Tools Required

❑ 5-mm nut driver, HP part number 8710-1219

Equipment Required

The computer controller may be a Unix (HP-UX 9.X or newer), PC (IBM compatible), Laptop (HP OmniBook), or Palmtop (HP 200LX). Please note that the Palmtop must have 256KB available memory for DOS. The required equipment is listed under each procedure.

NOTE A kit containing the RS-232 parts listed in each procedure can be obtained by ordering the RS-232 Cable Kit, HP part number E4400-60049.

Functionality Check

This procedure verifies that the signal generator powers up and that the internal instrument check identifies no errors. The internal check evaluates the correctness of operation and returns an error message if a problem is detected.

1. Turn power on to the signal generator by pressing the power switch. The green LED will light. Let the signal generator warm up for one hour.
2. Cycle the power to the signal generator. The green LED should again be lit and the signal generator will perform a check.
3. When the display is lit, check to see if the **ERR** annunciator is turned on.
4. If the **ERR** annunciator is turned on, review the error messages in the queue by pressing **Utility**, **Error Info**. If the error window does not automatically pop-up, then press **View Next Error Message**. The first error message in the queue will be shown in the text area of the display. Refer to the service guide for information about the error message.

   If there is more than one error message (each message will be designated as 1 of n), continue pressing the **View Next Error Message** softkey until you have seen all of the messages.
5. When you have resolved all of the error messages, press **Clear Error Queue(s)** to delete the messages. Then restart this procedure at Step 2.

NOTE For signal generators with Option 1E5, **ERROR 514, Reference Oven Cold** will occur whenever the signal generator is first connected to AC line power. The **OVEN COLD** annunciator and the **ERR** annunciator will both turn on. The **OVEN COLD** annunciator will automatically clear after approximately 5 minutes. The error queue cannot be cleared until the **OVEN COLD** annunciator has turned off.

Installation Procedure: Unix Version

This procedure uses an HP-UX computer to download new firmware into an HP ESG Series signal generator.

Table 2. Equipment Required for Unix Connection

Quantity	Description	Part Number
1	Serial RS-232 cable 9-pin (male) to 9-pin (female)	8120-6188
1	RS-232 null modem (male-male)	5181-6639
1	Serial RS-232 adapter (female-female)	1252-7824

1. Connect the computer to the signal generator via the modem:
   - **a.** Attach the male end of the RS-232 cable to the signal generator.
   - **b.** Attach the female end of the RS-232 cable to the modem.
   - **c.** Remove both standoffs from the female adapter with the 5-mm nut driver.
   - **d.** Attach the modified adapter to the modem and to the selected RS-232 port on the Unix computer.

NOTE Typically, you would use the /dev/tty00 RS-232 port, but /dev/tty01 is acceptable if it is available. *No other program can make use of this port at any time during the procedure. This includes getty, upsd, etc*.

2. Insert the firmware upgrade disk into the computer's floppy drive. In any empty directory, copy the file from the floppy disk using the command:

   doscp/dev/<floppy-device>:/DL SERIAL.CPZ dlserial.cpz

NOTE <floppy-device>= name of floppy drive on the workstation.

3. Insert the firmware upgrade disk into the computer. In any empty directory, unpack the cpio archive using the command:

   uncompress < dlserial.cpz | cpio -idmvu

4. Verify that the following items were unpacked:

   readme.**txt** (these instructions)
   dlserial.**ksh** (script to perform the download)
   split_dl (auxiliary program used by dlserial.ksh)
   falcon.**out** (the actual firmware image)

NOTE The directory may also contain files which are used for other operating systems.

5. Execute the **dlserial**.**ksh** script with the selected RS-232 port as the parameter. Typically, port A is **/dev**/**tty00** and port B is **/dev/tty01**. *Note that the second character of "dl" is the letter L, not the numeral 1*.

   As an example, if you are using /dev/tty00, the command is:

   dlserial.ksh /dev/**tty00**

6. Follow the instructions as they are presented. When you are presented with the **`Turn on the instrument NOW`** prompt, you must respond within 5 seconds to avoid a synchronization problem.

NOTE When asked to press Return, this refers to the HP-UX computer system keyboard **Return** key, *not* the similarly labeled key on the HP ESG Series signal generator!

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7. Once the download starts, *be patient*. It will take several minutes to complete and requires no further user interaction.

NOTE While the download is in progress, dlserial.ksh will show the communication that is taking place with the signal generator. What appear to be several (non-highlighted) prompts will appear on the screen. These will be automatically answered by the dlserial.ksh program.

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8. When dlserial.ksh completes and the signal generator is running the new firmware, disconnect the RS-232 cable.

NOTE If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure, starting with Step 5.

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9. To verify the new instrument firmware, review the “Instrument Verification” section of this note.

Installation Procedure: PC Version

This procedure uses a PC (IBM compatible computer) to download new firmware into an HP ESG Series signal generator.

Table 3. Equipment Required for PC Connection

Quantity	Description	Part Number
1	Serial RS-232 cable 9-pin (male) to 9-pin (female)	8120-6188
1	RS-232 null modem (male-male)	5181-6639
1	Serial RS-232 adapter (female-female)	1252-7824

1. Connect the computer to the signal generator via the modem:
   - **a.** Attach the male end of the RS-232 cable to the signal generator.
   - **b.** Attach the female end of the RS-232 cable to the modem.
   - **c.** Remove both standoffs from the female adapter with the 5-mm nut driver.
   - **d.** Attach the modified adapter to the modem and to the selected RS-232 port on the PC.

NOTE Typically, you would use the COM2 RS-232 port, but COM1 is acceptable if it is available. *No other program can make use of this port at any time during the procedure*.

2. Insert the firmware upgrade disk into the computer disk drive.
   - **a.** Create an empty directory called **update** on the C:\ drive to unpack the zip archive.
   - **b.** Using MS Windows, go to File Manager and select drive (A:\ or B:\). The two files dlserial.zip and pkunzip.exe should be present.
   - **c.** In the File Manager, to unpack the zip archive, dlserial.zip, click File and Run and type the following inside the Command Line box:

     A:\ pkunzip dlserial.zip C:\update

   - **d.** In MSDOS, simply type the above line at any MSDOS prompt. In Windows 95, select Start/Run from the task bar and then type in the above line.
   - **e.** Press Enter.

NOTE See the Appendix for information on unzipping files using MS Windows.

3. Verify that the following items were unpacked:

readme.txt	(these instructions)
dlserial.bat	(script to perform the download)
split_dl.exe	(auxiliary program used by dlserial.bat)
wait.exe	(auxiliary program used by dlserial.bat)
falcon.out	(the actual firmware image)
dlserial.pif	(Windows 386 enhanced mode program information to run dlserial.bat under Windows®)

NOTE The directory may also contain files which are used for other operating systems.

4. Execute the **dlserial.bat** script with the selected RS-232 port as the parameter.
   - ❏ As an example, if you are using COM, and working in DOS, the commands are:

     C:\ cd\update

     dlserial.bat com
   - ❏ If you are using Windows, you must execute dlserial.pif rather than directly executing dlserial.bat. Type **com1** in the parameter message box.
   - ❏ See the Appendix for a DOS directory setup example.
5. Follow the instructions as they are presented. When you are presented with the **`Turn on the instrument NOW`** prompt, you must respond within 5 seconds to avoid a synchronization problem.

NOTE When asked to press Return, this refers to the PC keyboard **Enter** key, *not* the similarly labeled key on the HP ESG Series signal generator!

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6. Once the download starts, *be patient*. It will take several minutes to complete and requires no further user interaction.

NOTE While the download is in progress, dlserial.bat will show the communication that is taking place with the signal generator. What appear to be several (non-highlighted) prompts will appear on the screen. These will be automatically answered by the dlserial.ksh program.

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7. When dlserial.bat completes and the signal generator is running the new firmware, disconnect the RS- 232 cable.

NOTE If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure, starting with Step 4.

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8. To verify the new instrument firmware, review the “Instrument Verification” section of this note.

Troubleshooting Hints

If the signal generator is in the wrong mode, i.e. bootrom mode, the download program will not detect this condition. If this occurs, you must reboot the computer by pressing the following three keys: **Ctr Alt Del** and repeat the procedure from Step 4.

Installation Procedure: OmniBook PC Version

This procedure uses an OmniBook PC to download new firmware into an HP ESG Series signal generator.

Table 4. Equipment Required for OmniBook Connection

Quantity	Description	Part Number
1	Serial RS-232 cable 9-pin (male) to 9-pin (female)	8120-6188
1	RS-232 null modem (male-male)	5181-6639
1	Serial RS-232 adapter (female-female)	1252-7824

1. Connect the computer to the signal generator via the modem:
   - **a.** Attach the male end of the RS-232 cable to the signal generator.
   - **b.** Attach the female end of the RS-232 cable to the modem.
   - **c.** Remove both standoffs from the female adapter with the 5-mm nut driver.
   - **d.** Attach the modified adapter to the modem and to the selected RS-232 port on the PC.

NOTE Typically, you would use the COM2 RS-232 port, but COM1 is acceptable if it is available. *No other program can make use of this port at any time during the procedure*.

2. Insert the firmware upgrade disk into the computer disk drive.
   - **a.** Create an empty directory called **update** on the C:\ drive to unpack the zip archive.
   - **b.** Using MS Windows, go to File Manager and select drive (A:\ or B:\). The two files dlserial.zip and pkunzip.exe should be present.
   - **c.** In the File Manager to unpack the zip archive, dlserial.zip, click File and Run and type the following inside the Command Line box:

     A:\ pkunzip dlserial.zip C:\update

   - **d.** In MSDOS, simply type the above line at any MSDOS prompt. In Windows 95, select Start/Run from the task bar and then type in the above line.
   - **e.** Press Enter.

NOTE See the Appendix for unzipping files using MS Windows.

3. Verify that the following items were unpacked:

readme.txt	(these instructions)
dlserial.bat	(script to perform the download)
split_dl.exe	(auxiliary program used by dlserial.bat)
wait.exe	(auxiliary program used by dlserial.bat)
falcon.out	(the actual firmware image)
dlserial.pif	(Windows 386 enhanced mode program information to run dlserial.bat under Windows)

NOTE The directory may also contain files which are used for other operating systems.

4. Execute the **dlserial.bat** script with the selected RS-232 port as the parameter.
   - ❏ As an example, if you are using COM2, and working in DOS, the commands are:

     C:\ cd\update

     dlserial.bat com2
   - ❏ If you are using Windows, you must execute dlserial.pif rather than directly executing dlserial.bat.
   - ❏ See the Appendix for a DOS directory setup example.
5. Follow the instructions as they are presented. When you are presented with the **`Turn on the instrument NOW`** prompt, you must respond within 5 seconds to avoid a synchronization problem.

NOTE When asked to press Return, this refers to the PC keyboard **Enter** key, *not* the similarly labeled key on the HP ESG Series signal generator!

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6. Once the download starts, *be patient*. It will take several minutes to complete and requires no further user interaction.

NOTE While the download is in progress, dlserial.bat will show the communication that is taking place with the signal generator. What appear to be several (non-highlighted) prompts will appear on the screen. These will be automatically answered by the dlserial.ksh program.

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7. When dlserial.bat completes and the signal generator is running the new firmware, disconnect the RS- 232 cable.

NOTE If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure, starting with Step 4.

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8. To verify the new instrument firmware, review the “Instrument Verification” section of this note.

Troubleshooting Hints:

If the signal generator is in the wrong mode, i.e. bootrom mode, the download program will not detect this condition. If this occurs, you must reboot the computer by pressing the following three keys: **Ctr Alt Del** and repeat the procedure from Step 4.

Installation Procedure: HP Palmtop Version

This procedure uses an HP 200LX Palmtop computer to download new firmware into an HP ESG Series signal generator.

Table 5. Equipment Required for Palmtop Connection

Quantity	Description	Part Number
1	Serial RS-232 cable 9-pin (male) to 9-pin (female)	8120-6188
1	Serial RS-232 adapter (male-male)	1252-7825
1	5 MB flash disk	F1012A
1	HP connectivity pack (contains connectivity pack software and serial cable)	F1015-80002

1. Insert the firmware upgrade disk into a PC compatible computer disk drive.
   a. Create an empty directory called **update** on the C:\ drive to unpack the zip archive.
   b. Using MS Windows, go to File Manager and select drive (A:\ or B:\). The two files dlserial.zip and pkunzip.exe should be present.
   c. To unpack the zip archive, dlserial.zip, click File and Run and type the following inside the Command Line box:

      A:\ pkunzip dlserial.zip C:\update

   d. Press Enter.

NOTE Regarding Connectivity Pack Serial cable connection to the palmtop, make sure that the HP logo on the plug faces up.

2. See the Appendix for unzip. Using the Palmtop's connectivity pack software and hardware, download the upgrade firmware files from a PC 3.5 inch disk drive to the Palmtop's flash disk, into a directory called A:\dl. See the Appendix for a DOS file copy example. Refer to the HP Palmtop owner's manual for this procedure.
3. Verify that the following items were copied:

readme.txt (these instructions)
dlserial.bat (script to perform the download)
split_dl.exe (auxiliary program used by dlserial.bat)
wait.exe (auxiliary program used by dlserial.bat)
falcon.out (the actual firmware image)
dlserial.icn (icon file for the system manager)

NOTE The directory may also contain files which are used for other operating systems.

4. Connect the Palmtop to the signal generator:
   a. Attach the male end of the RS-232 cable to the signal generator.
   b. Attach the female end of the RS-232 cable to the male adapter.
   c. Attach the connectivity pack serial cable to the male adapter and to the selected RS-232 port on the Palmtop. *Make sure that the HP logo on the plug faces up.*

NOTE Use the COM1 RS-232 port. *No other program can make use of this port at any time during the procedure*.

5. Use the following procedure to set up the Palmtop's application manager.

   a. Press the Palmtop's **MENU** key.
   b. Press **A** for application.
   c. Press **A** for add (This brings up the Add Application window)
   d. In the **Name** box, type **download** then press **tab**.
   e. In the **Path** box, type **a:dl\dlserial.bat com1|250** then press **tab**. (Press the **Shift** key then the **** key to type the |.)
   f. In the **Comments** box, type **¿** (**Fn**, **3**) and **¡** (**Fn**, **Filer**) then tab to the **ICON** box.

   These settings prevent the system manager from interfering with the download. The |250 entry in the path box provides sufficient DOS memory for the programs.

6. Within the **ICON** box, scroll by using the up arrow key to select the signal generator icon. If everything is correct, press F10 **OK** on the screen. This will return you to the applications manager screen. The new application icon should be present.

7. To start the download program, select the signal generator icon and press enter.

8. Follow the instructions as they are presented. When you are presented with the **Turn on the instrument NOW** prompt, you must respond within 5 seconds to avoid a synchronization problem.

NOTE When asked to press Return, this refers to the Palmtop keyboard **Return** key, *not* the similarly labeled key on the HP ESG Series signal generator!

9. Once the download starts, *be patient*. It will take 15 minutes to complete and requires no further user interaction.

NOTE While the download is in progress, dlserial.bat will show the communication that is taking place with the signal generator. What appear to be several (non-highlighted) prompts will appear on the screen. These will be automatically answered by the dlserial.ksh program.

10. When dlserial.bat completes and the signal generator is running the new firmware, disconnect the RS- 232 cable.

NOTE If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure, starting with Step 6.

11. To verify the new instrument firmware, review the "Instrument Verification" section of this note.

Troubleshooting Hints:

1. If the signal generator does not enter the remote mode when downloading:

   ❑ Make sure you are turning on the signal generator within 5 seconds of the request.
   ❑ Make sure the serial cable is plugged into the Palmtop with the HP logo facing up.
   ❑ Make sure the serial cable and adapters are securely connected to the signal generator.

2. If the signal generator displays **`Command not found`** or if the download stops working properly:

   ❏ Make sure the power is not interrupted and no keys are pressed on the signal generator during the download.
   ❏ Make sure the serial cable is securely connected.
   ❏ Check the Palmtop for a low battery.

Instrument Verification

Verify that when powering up the signal generator after the firmware download, that the signal generator displays the instrument's main firmware mode on the display.

1. Perform the following procedure to verify the new firmware revision and date after the instrument has been on.

   a. Press the following keys: **Utility, Instrument Info/Help Mode, Diagnostic Info**.

2. The date will be listed on the display under "Instrument Information".

Appendix

Copying Files to a Directory Using DOS

The PC MS-DOS® command line example below shows how to create a new file directory on the PC hard drive and move the necessary files from the firmware upgrade disk into the new directory.

1. Go to MS-DOS and create this directory on the PC's hard drive.

   a. C:\> md dl (Make the directory called dl)
   b. C:\> cd dl (Change to dl directory)
   c. C:\>DL>

2. Copy files into dl directory. Press enter on the PC to transfer files.

   a. C:\DL> copy a: split_dl.exe
   b. C:\DL> copy a: dlserial.bat
   c. C:DL> copy a: wait.exe
   d. C:DL> copy a: falcon.out

Unzipping Files Using MS Windows

The Pkunzip.exe file is included on the PC disk with the zipped file.

1. To review the files, go to the Windows File Manager and choose (A: or B:) floppy directory.
2. To unzip the file, dlserial.zip, click File then Run. Type the following within the command line box and press enter:

   A:\pkunzip dlserial.zip c:\update

NOTE (run pkunzip) (zip filename) (directory where you want the unzipped file to go)