

Installation Note

ESG-1000A, -2000A, -3000A, -4000A

ESG-D1000A, -D2000A, -D3000A, -D4000A

Signal Generators

Firmware Upgrade Kit

Kit Part Number: E4400-60046



Part Number E4400-90050

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Firmware Upgrade Kit

Product Affected:	ESG Series and ESG-D Series
Serial Numbers:	All
Options:	All
To Be Performed By:	(X) Agilent Service Center (X) Personnel Qualified by Agilent (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 or the Agilent Website. This installation note includes separate procedures for Unix, PC, laptop, or palmtop computers.

Installation Kit Parts List

Table 1. Kit contents

Item	Quantity	Description	Part Number
1	1	Firmware DOS disk upgrade	E4400-10002
2	1	Firmware Unix disk upgrade	E4400-10003
3	1	Installation Note	E4400-90050

Tools Required

- 5 mm nut driver, 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). Notice that the palmtop must have 256 kB 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, 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 instrument warm up for one hour.
2. Cycle the power to the signal generator. The green LED should again be lit and the instrument 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, 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 two.

NOTE: For instruments 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 will automatically clear after approximately 5 minutes. The error queue *cannot* be cleared, however, until the OVEN COLD annunciator has turned off.

Installation Procedure: Unix Version

This procedure uses an HP-UX computer to download new firmware into the 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)	1252-7825

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 following command:

```
doscp /dev/<floppy-device>:/DL SERIAL.CPZ dlserial.cpz  
(where <floppy-device> is the name of the floppy drive on the workstation)
```

3. Insert the firmware upgrade disk into the computer. In any empty directory, unpack the cpio archive using the following 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.exe        (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. (Notice that the second character of "dl" is the letter l, not the numeral 1.) For 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 prompted with `Turn on the instrument NOW`, you must respond within 5 seconds to avoid a synchronization problem.
 - When you are instructed to press **Return**, this refers to the HP-UX computer system keyboard **Return** key, *not* the similarly labeled key on the signal generator.
 - Once the download starts, it will take several minutes to complete. No further interaction is required. While the download is in progress, `dlserial.ksh` will show the communication that is taking place with the signal generator. What appears to be several (non-highlighted) prompts will appear on the display. These will be automatically answered by the `dlserial.ksh` program.
7. When `dlserial.ksh` completes and the signal generator is running the new firmware, disconnect the RS-232 cable.
 - If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure starting with step 5.
8. To verify that the new firmware has been downloaded, on the signal generator press **Utility, Instrument Info/Help Mode, Diagnostic Info**. The new firmware revision and firmware date should be displayed under “Instrument Information.”

Installation Procedure: PC Version

This procedure uses a PC (IBM compatible computer) to download new firmware into the 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)	1252-7825

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, click Run, and type the following inside the Command Line box:

```
A:\pkunzip dlserial.zip C:\update
```

Or, in MSDOS, type the above line at any MSDOS prompt.
Or, in Windows 95, select Start/Run from the task bar and then type the above line.
 - d. 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.
 - If you are using COM1, and working in DOS, the commands are:

```
C:\cd\update  
dlserial.bat com1
```
 - 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 prompted with `Turn on the instrument NOW`, you must respond within 5 seconds to avoid a synchronization problem.
 - When you are instructed to press **Return**, this refers to the PC keyboard **Enter** key, *not* the **Return** key on the signal generator.
 - Once the download starts, it will take several minutes to complete. No further interaction is required. 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 display. These will be automatically answered by the dlserial.bat program.
6. When dlserial.bat completes and the signal generator is running the new firmware, disconnect the RS-232 cable.
 - If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure starting with step 4.
7. To verify that the new firmware has been downloaded, on the signal generator press **Utility, Instrument Info/Help Mode, Diagnostic Info**. The new firmware revision and firmware date should be displayed under “Instrument Information.”

Troubleshooting Hints

If the signal generator is in the wrong (bootrom) mode, the download program will not detect this condition. If this occurs, you must reboot the computer by pressing the following three keys simultaneously: **Ctrl Alt Del**. Then repeat the procedure from step 4.

Installation Procedure: OmniBook PC Version

This procedure uses an OmniBook PC to download new firmware into the signal generator.

Table 4. Equipment Required for OmniBook 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)	1252-7825

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, click Run, and type the following inside the Command Line box:

```
A:\pkunzip dlserial.zip C:\update
```

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

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

3. Verify that the following items were unpacked:

<code>readme.txt</code>	(these instructions)
<code>dlserial.bat</code>	(script to perform the download)
<code>split_dl.exe</code>	(auxiliary program used by <code>dlserial.bat</code>)
<code>wait.exe</code>	(auxiliary program used by <code>dlserial.bat</code>)
<code>falcon.out</code>	(the actual firmware image)
<code>dlserial.pif</code>	(Windows 386 enhanced mode program information to run <code>dlserial.bat</code> 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.
 - If you are using COM1, and working in DOS, the commands are:

```
C:\cd\update  
dlserial.bat com1
```
 - 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 prompted with `Turn on the instrument NOW`, you must respond within 5 seconds to avoid a synchronization problem.
 - When you are instructed to press **Return**, this refers to the PC keyboard **Enter** key, *not* the **Return** key on the signal generator.
 - Once the download starts, it will take several minutes to complete. No further interaction is required. 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 display. These will be automatically answered by the dlserial.bat program.
6. When dlserial.bat completes and the signal generator is running the new firmware, disconnect the RS-232 cable.
 - If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure starting with step 4.
7. To verify that the new firmware has been downloaded, on the signal generator press **Utility, Instrument Info/Help Mode, Diagnostic Info**. The new firmware revision and firmware date should be displayed under “Instrument Information.”

Troubleshooting Hints

If the signal generator is in the wrong (bootrom) mode, the download program will not detect this condition. If this occurs, you must reboot the computer by pressing the following three keys simultaneously: **Ctrl Alt Del**. Then repeat the procedure from step 4.

Installation Procedure: HP Palmtop Version

This procedure uses an HP 200LX palmtop computer to download new firmware into the signal generator.

Table 5. Equipment Required for HP 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)	1252-7824
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, then click Run, and type the following inside the Command Line box:

```
A:\pkunzip dlserial.zip C:\update
```
 - d. Press Enter.

NOTE: For the 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 palmtop owner's manual for this procedure.
3. Verify that the following items were unpacked:

<code>readme.txt</code>	(these instructions)
<code>dlserial.bat</code>	(script to perform the download)
<code>split_dl.exe</code>	(auxiliary program used by <code>dlserial.bat</code>)
<code>wait.exe</code>	(auxiliary program used by <code>dlserial.bat</code>)
<code>falcon.out</code>	(the actual firmware image)
<code>dlserial.icn</code>	(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. On the palmtop, open the Applications Manager: press **&....**
 - b. Then press **MENU**.
 - c. Press **A** (Application).
 - d. In the Name box, type download. Then press **TAB**.
 - e. In the Path box, type a:d1\dserial.bat com1|250. (Press the shift key and the \ key to type the |.) Then press **TAB**.
 - f. In the Comments box, type **z** (**Fn, 3**) followed by **i** (**Fn, FLER**). Then press **TAB**.

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. In the Icon box, scroll, using the up arrow key, to select the signal generator icon. If everything is correct, press **F10** (OK). 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 prompted with Turn on the instrument NOW, you must respond within 5 seconds to avoid a synchronization problem.
 - When you are instructed to press **Return**, this refers to the palmtop keyboard **ENTER** key, *not* the **Return** key on the signal generator.
9. Once the download starts, it will take about 15 minutes to complete. No further interaction is required. While the download is in progress, dserial.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 display. These will be automatically answered by the dserial.ksh program.
 - When dserial.bat completes and the signal generator is running the new firmware, disconnect the RS-232 cable.
 - If the procedure fails (due to loss of synchronization, accidental loss of power, etc.), repeat the procedure starting with step 6.
10. To verify that the new firmware has been downloaded, on the signal generator press **Utility, Instrument Info/Help Mode, Diagnostic Info**. The new firmware revision and firmware date should be displayed under "Instrument Information."

Troubleshooting Hints

1. If the signal generator does not enter remote mode when downloading:
 - Make sure that you turn on the signal generator within 5 seconds of the request.
 - Make sure that the serial cable is plugged into the palmtop with the HP logo facing up.
 - Make sure that 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 that the power is not interrupted and no keys are pressed on the signal generator during the download.
 - Make sure that the serial cable is securely connected.
 - Check the palmtop for a low battery.

Agilent Web Site Firmware Download Procedure

This procedure uses a net browser to download new firmware into the signal generator.

NOTE: See the Appendix for a browser copy file example.

1. Access the “Agilent Technologies Test & Measurement” web page at the following URL:

`http://www.tm.agilent.com/`

2. From the Agilent Technologies website, in the Quick Search box, type “ESG +A”.

3. Scroll to the section titled “Software, Firmware Updates & Patches,” and select the item:

Agilent ESG and ESG-D Series “A Version” Firmware Upgrade, Revision B.01.03

4. To download the latest firmware to a PC, follow these steps:

a. Place an empty, formatted disk in drive A.

b. Click on the ESG (or ESG-D) Series Firmware Upgrade. For PC format (DOS), click `dlserial.exe`. For the HP-UX format, click `dlserial.cpz`.

c. Click “Save this file to disk.”

d. Choose the `A:\` directory if you are using an empty formatted disk.

e. The file `dlserial.zip` should be displayed in the File Name: window. (The file name is `dlserial.cpz` for the Unix version. Click the OK button to start the file transfer. (See “Installation Procedure: PC Version” or “Installation Procedure: Unix Version” to uncompress files.)

The Saving Location window will appear showing the file transfer process. Once the file has transferred, you will be returned to the web page.

f. To download `pkunzip.exe` to the PC disk located in drive `A:\`, click the `pkunzip.exe` link and repeat steps 7a through 7e.

g. Exit browser when the download is complete.

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. C:\> md dl (Make the directory called dl.)
2. C:\> cd dl (Change to the directory called dl.)
3. C:\DL> copy a: split_dl.exe (Copy split_dl.exe to the directory called dl.)
4. C:\DL> copy a: dlserial.bat (Copy dlserial.bat to the directory called dl.)
5. C:\DL> copy a: wait.exe (Copy wait.exe to the directory called dl.)
6. C:\DL> copy a: falcon.out (Copy falcon.out to the directory called dl.)

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 the appropriate directory (A: or B:).
2. To unzip the file, dlserial.zip, click File, then click Run.
3. Type the following information in the command line box and press enter:

```
A:\pkunzip dlserial.zip c:\update  
(run pkunzip) (zip filename) (directory where you want the unzipped file to go)
```

Using a Browser to Download or Copy Files from a Web Page

1. Click on File located at the top left corner of the browser.
2. Choose Save As.
3. Choose an empty directory.
4. Make sure that the file name to download or copy is within the File Name Window.
5. Click the OK button to copy the file. (A saving Location Window will appear indicating the copy file progress.)
6. Once the download or copy of the file is complete, exit the browser.